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ABSTRACT

The document contains 12 papers from the 1975 National Conference for Training Occupational, Physical, and Recreational Therapists in the Area of Deaf-Blind to assist in improving services to deaf-blind children and youth and thereby reduce the impact of their multiple impairments. Entries include the following titles and authors: "Transdisciplinary Approaches to Education and Therapy for Deaf-Blind Children" (E. Hammer); "Low-Vision Rehabilitation" (F. Porter); "Movement in Communication and Language Development of Deaf-Blind Children" (N. Fieber); "A Teacher's Approach to Sensory Stimulation of the Nonambulatory Deaf-Blind Child" (C. Battle); "Sensory Stimulation--The Role of the Therapist and the Special Educator" (C. Stone); "Creative Dramatics--Sensory Stimulation and Creativity for the Multiply Handicapped Child" (C. Stensrud); "The Teacher and the Child Functioning at the Self-Help Skills Level" (R. Condon); "The Occupational Therapist and the Deaf-Blind Child at the Basic Self-Help Skills Level" (B. Scanlan); "Recreation for Deaf-Blind Children" (T. Graham); "Daily Living and Leisure Skills Leading into Academic or Prevocational Skills" (T. Ballou); and "Recreation Via Motor Education" (J. Thomas). Among the topics covered within the presentations are early development of congenital rubella children, movement programs designed for communication, the motor base for learning, examples of creative dramatic activities, outdoor education/camping for the deaf-blind, home-based and community recreation, and problems of the deaf-blind. (SW)

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Proceedings

TRAINING OCCUPATIONAL, PHYSICAL, and RECREATIONAL THERAPISTS in the Area of Deaf-Blind

Prepared by Jill M. Gray, OTR
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Preface

Comments from occupational and physical therapists and teachers who responded to the recent survey requesting information on services provided for deaf-blind children within the 10-region area reflect a definite need for trained therapists to work with deaf-blind children within their individual instructional settings. Practice patterns of therapists suggest that only a limited number hold positions in which a major part of their efforts is devoted to the deaf-blind population. In general, therapists are minimally involved with the deaf-blind community and/or the families of the deaf-blind, a situation which needs to be altered.

The basic goal of the National Conference for Training Occupational, Physical, and Recreational Therapists in the Area of Deaf-Blind was to assist in improving the services to deaf-blind children and youth and thereby reduce the impact of their multiple impairments. One way to accomplish this goal is to attempt to motivate and involve occupational, physical, and recreational therapists in the provision of services to deaf-blind children and youth. Toward that end, therapists who had been serving those persons with dual sensory involvements and other multihandicaps were invited to share experiences and techniques by making presentations at the conference. Each Regional Center for Services for Deaf-Blind Children and Youth was invited to send as representatives from the region therapists who might like to offer services to the deaf-blind.

We wish to thank all of those who helped in the organization and preparation of the conference and those who served as consultants and participants throughout the strenuous conference schedule.

It is with a great deal of pleasure that we present these proceedings. We hope that it will enhance services to the deaf-blind population.

WILLIAM A. BLEA

Director,

Southwestern Region Deaf-Blind Center

Agenda for Workshop

Le Baron Hotel
1055 Regal Row
Dallas, Texas

Monday, July 28, 1975

5-10 p.m. Registration and Reception

5:30-9:30 p.m.

Materials will be displayed in the ballroom during these hours only.

Tuesday, July 29, 1975

8:30-9 a.m. General Session

Harland M. Irvin, Jr.
Program Coordinator
Texas Education Agency Regional Center for
Services to Deaf-Blind
Austin, Texas

9-9:45 a.m. Keynote Address

Edwin K. Hammer,
Project Director,
South Central Regional Center for
Services to Deaf-Blind
Callier Center
Dallas, Texas

9:45-10:45 a.m. Medical Orientation

Murdina Desmond, M.D.
Texas Children's Hospital
Houston, Texas

10:45-11 a.m. Break

11 a.m.-12:30 p.m. Low-Vision Training

Frank Porter, O.D.
University of Houston
College of Optometry
Houston, Texas

12:30-1:30 p.m. Lunch

1:30-4:30 p.m. Work Session A

Nancy Fieber,
Physical Therapist
Louis Meyer Rehabilitation Institute
Omaha, Nebraska

1:30-4:30 p.m. Work Session B

Christy Battle
Callier Center for Communication Disorders
Deaf-Blind Program
Dallas, Texas

Cynthia L. Stone
Physical Therapist
Dallas, Texas

Carol Stensrud
Therapeutic Recreation Consultant
Recreation Education Program
University of Iowa
Iowa City, Iowa

7:30-9:30 p.m. Film Festival

Wednesday, July 30, 1975

9 a.m.-Noon Work Sessions

Same presentations as Tuesday afternoon. Participants who attended *Work Session A* on Tuesday afternoon, please attend *Work Session B* this morning, and vice versa.

Noon-1 p.m. Lunch

1:30-4:30 p.m. Work Session C

Raymond Condon
Teacher
Texas School for the Blind Annex
Austin, Texas

Betty Scanlan
Physical Therapist
Siegel Institute
Michael Reese Hospital
Chicago, Illinois

3-3:30 Break

Terry Graham
Coordinator
Mississippi Deaf-Blind Program
Ellisville State School
Ellisville, Mississippi

1:30-4:30 p.m. Work Session D

Toby Ballou
Teacher, Extended Service Program
Deaf-Blind Unit
Children's Convalescent Center
Bethany, Oklahoma

Janice K. Thomas
Motor Skills Specialist
Colorado School for the Deaf-Blind
Colorado Springs, Colorado

3-3:30 p.m. Break

Thursday, July 31, 1975

9 a.m.-Noon Work Sessions

Same presentation as Wednesday afternoon. If you attended *Work Session C* on Wednesday afternoon, please attend *Work Session D* this morning, and vice versa.

Noon-1 p.m.

Panel to wrap up conference

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Transdisciplinary Approaches to Education and Therapy for Deaf-Blind Children

Edwin K. Hammer

Assistant Professor, University of Texas at Dallas; and Project Director, South Central Regional Center for Deaf-Blind Children, Callier Center for Communication Disorders

This conference provides an opportunity for us to explore. During the next two days, we will be working together to define roles and relationships of personnel working with deaf-blind children. This exploration is necessary if we are to become effective and efficient in providing services to deaf-blind children. This conference is not designed to train teachers to become therapists or to train therapists to become teachers. Each of us has enough to do in our own chosen profession. What we are trying to delineate is how we can help each other in our work with deaf-blind children and how communication, comfort, and respect can be developed among professionals.

Achieving comfortable cooperation requires security in our own profession, mutual trust in others, and communication among professional groups. To do this requires working together on a task that has been attempted many times in the past and has worked in some instances and has failed in other instances. I am sure that you know what I am talking about when I mention the two professionals who get together and one says to the other, "Now let's work as a team; here is what you do." Each of us can be a leader in our professional area but few of us can be followers if we feel threatened, if we are not sure of what our goals are, or if we are not recognized for the work that we do. Yet, working with deaf-blind children requires many, many followers to do all that needs to be done. In those instances in which professionals have worked together successfully, I would speculate that at times everyone was a follower, a helper, a person willing to provide whatever services were needed rather than hiding behind his or her professional shield ready to do battle.

I think that success in joint efforts of professionals can be increased if we understand that each of us has something to offer, if we understand what each of us has to offer, and if we are willing to learn about each other as professionals and as

people. I also think that this can be done in every instance in which professionals work together. It is not just a matter of chance or of having the right chemistry.

I would like to propose that the concept of a *transdisciplinary* team be explored during the next two days. A transdisciplinary team is composed of a group of professionals who extend *across* traditional lines of training and work to try to get into what the other person is doing and to try to see how one person's knowledge can help another person. This differs from the concept of the "interdisciplinary" team. In an interdisciplinary team the work is carried on among a group of professionals. The interdisciplinary approach may work in some settings; however, my own experiences lead me to believe that this often leads to a leader-follower relationship.

By crossing over our own training, we can begin to recognize areas in which we might offer assistance that we might have been hesitant to offer in the past. Working across disciplines does not mean that we are doing away with our own professional training, or that we are breaking away from our interest and training from a different vantage.

To begin the study of the concept of a transdisciplinary team, we would benefit from a review of some of the terms that initially define our roles and relationships. "Occupational therapy," for instance, has been defined by Meyers (1969) as "the art and science of directing man's response to selected activity to promote and maintain health, to prevent disability, to evaluate behavior, and to treat or train patients with physical or psychosocial dysfunction." Analysis of this definition may serve as a direction to pursue in our exploration. Occupational therapy is an art; that is to say, skills are required to utilize occupational therapy training that is specific to each person. It is not a mechanical activity. Occupational therapy requires interpretation, creativity, and flexibility to utilize

the body of knowledge available to the therapist. Occupational therapy also requires the use of science; scientific principles guide those who utilize occupational therapy procedures. Therapy skills are applied to promote and maintain health. Thus, occupational therapy reflects its medical tradition. Occupational therapy is used to evaluate behavior. This means that occupational therapy shares with psychology the study of human behavior and the evaluation of human behavior. Occupational therapy is responsible for the training and treatment of patients with physical or psychosocial dysfunction. In this respect, occupational therapy is combined with physical therapy, speech pathology, recreational therapy, and audiology in treating patients as well as training patients to learn to adjust to dysfunction.

Recreational therapy may be defined as those activities designed to provide enjoyment during leisure hours to adults and children so that they can lead a well-rounded life. These activities are necessary so the individual will learn to use mental and physical abilities in noncompetitive areas of exercise, sports, and games to lead a well-balanced and satisfying life. Thus, the recreational therapist relates to education in teaching persons how to use leisure time for self-satisfying activities. The recreational therapist relates to physical therapy in helping the individual learn to integrate body movements and body functions. The recreational therapist uses creativity, esthetics, form, and structure to help the individual use body processes. By so doing, the therapist uses and supports occupational therapy.

Physical therapists work with patients who are disabled by illness or accident or who are born with a handicap. Physical therapists evaluate neuromuscular, neuro-skeletal, sensorimotor, and related cardiovascular and respiratory functions in patients. They plan and implement initial and subsequent treatment programs on the basis of test findings and within the referral of a licensed physician or dentist with whom they remain in contact regarding the patient. In addition, they try to motivate and instruct the patient, his or her family, and others who might help him or her through the treatment and convalescent period. Thus, the physical therapist relates to psychology and occupational therapy in evaluation; to medicine in terms of functional processes; and to education in terms of instructing patients and others regarding the treatment program.

These definitions do not mean that there is over-lap in the resources available to assist an individual such as a deaf-blind person. They mean that there are areas common to all professions and that there are areas which do not require common approaches and relationships. For instance, to me, a physical therapist is concerned with gross motor function and the neurological correlates of movement of large muscles and bone structures. The occupational therapist is concerned with the use of fine motor skills, including perceptual functions, activities of daily living, and orientation of the patient toward the reality of the external environment. The recreational therapist helps individuals use their leisure time to keep physically fit and mentally engaged in activities that provide diversion and enjoyment to the individual.

The crossing of boundaries comes from the change in perspective of what each discipline can do for the other discipline to achieve a total program. For instance, the physical therapist may work with a child on trunk control. The recreational therapist may continue this type of activity in a noncompetitive game or activity so that the child has reason to integrate what he or she has experienced in physical therapy. The recreational therapist is not trying to out-do the physical therapist nor to develop a trunk-control program, but is trying to provide experiences for the integration of learning which the physical therapist may not have the time to accomplish within a therapy session. By observing how the recreational therapist provides a stimulating environment in which the child can experience the trunk control developed in therapy, the physical therapist can plan additional exercises based upon the experiences of the recreational time. Thus, there is a more cohesive program. Similarly, the occupational therapist who is able to observe the program in physical therapy and recreational therapy may begin to work with the child during the recreational period to build upon the trunk-control activities that the child has experienced. Better trunk control helps the child relate to the environment on a different plane and thus would open up new ways for the child to reach for objects, view objects, and interact more with the world around. The child does not have three therapy programs, which is often the result of an interdisciplinary approach, but one program with three professionals working together. This process may be reversed with the recreational therapist or the

occupational therapist beginning the plan and the other therapists continuing the activities.

If these roles can be identified in terms of the needs of the child, integrated services may begin to emerge. Another example of transdisciplinary teamwork may be found in working with deaf-blind children in the area of language development. Language development may seem far afield from the three disciplines that have been discussed. Think for a minute: How can boundaries be crossed to help the deaf-blind child learn to communicate and to use language? The base of language is motoric. There is the physical sensation of hearing or seeing a symbol system. In this primary area, what can the three disciplines contribute to the needs of the child? Certainly, the recreational therapist can provide pleasurable sensorimotor experiences to stimulate language development. Until a child has a need to communicate, the child has no need to develop expressive language. The child who has jumped on a trampoline or rolled over a large ball has an experience to communicate, either to indicate the desire to do it again or the desire to communicate to another person what has been sensed. The occupational therapist may stimulate sensation to orient the child to stimuli in the environment. This selection of sensation may contribute to receiving communication as well as to expressing communication. The physical therapist may help to integrate these sensorimotor experiences into activities in which the child must move to act on the environment and receive the pleasure that has been previously experienced. In each of these instances, words or signs may be incorporated into the activity to help the child develop an awareness of symbol systems.

Relationships may be identified among the disciplines in regard to working with deaf-blind children. In an integrated plan of therapy, one discipline may be primarily responsible in the initial phase. A child who does not have experiences to the degree that choice of behavior is a common trait may need to have a wide range of experiences provided by a recreational therapist before further programming may be undertaken. Another child may need range-of-motion therapy to learn to direct body movements before that child can enter into meaningful recreational activities. Either of these children may need sensory stimulation or need to gain integration of sensory function before any of these activities are relevant to the development level of the child. The occupa-

tional therapist can provide specific assistance to start the child on the therapy plan so that others can take up the plan and carry it further.

These relationships seem to be built around three components: process, function, and integration. Process is the underlying neuromuscular, sensorimotor, and perception activities that are necessary to achieve a task. Function is the developmental, maturational, and learned application of processes to act on the environment. Integration is the ability to maintain what has been experienced, recall what has occurred in the past, and transfer learned patterns to new situations. The challenge is to learn to analyze the level of function in terms of process to assess the integration that has occurred. This triad forms the basis of a transdisciplinary approach to programming. Each specialty may assess each of these areas, develop tentative plans for intervention, and report these to the other disciplines. It might be an adventure to have the plans that were made within the various disciplines reported to the group by a member of another discipline. By so doing, we could see ourselves as others see us and begin to establish a trust in another person (who is not trained in our field) to relate observations and plans to the group. It would also serve as a time for the originating discipline to serve in a consultative role in staffing their own plans! I also believe that plans would be extremely well-organized if we knew that someone else was going to present our observations and recommendations. This might be too far out to be productive; however, the point is that, in developing a working arrangement, we need to learn to complement other disciplines as well as supplement the recommended program so that we do not present fragmented plans and strategies. Much of the fragmentation that is observed in children could be diminished if the various people who worked with the child were less fragmented in their efforts.

Achieving a comfortable working arrangement requires a high level of maturity on the part of professionals. We have passed the time when any one person or one profession can provide the total program to the total child. We are beginning to learn to work together and, as we develop this maturity, we will become more capable of complementing other professionals in assisting and sharing with others. We can now use all the resources available to us and the child as we recognize the common areas of concern and common goals in

our program plan. We can become our own best resource when we have learned to include others rather than to exclude others.

Some adjustments will be required to achieve our potential as sharing professionals. It may require some re-thinking of our own functions and

goals. By giving, we receive; and in the end the child benefits. That is the goal shared by all of us. I hope that in the next two days we can make significant gains in achieving our goal of providing services relevant to the child, using all resources we can imagine.

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Medical Aspects of the Congenital Rubella Syndrome

Murdina M. Desmond, M.D.

Professor of Pediatrics and Community Medicine, Baylor College of Medicine, Houston, Texas

From many standpoints, the outbreak of congenital rubella in the United States in 1964 was one of the most significant medical events of our time. Although this epidemic was 11 years ago, many of the problems are still with us, particularly those involved with the prevention, management, and education of this disease.

An Australian ophthalmologist, Sir Norman Gregg, was the first to recognize the teratogenic potential of the rubella virus. In 1941 he observed that rubella occurring during early pregnancy in the mother could be followed by congenital malformation in the infant. The principal malformations were those affecting the eye, the heart, and the ear. He detected cataracts, microphthalmia, nystagmus, retinopathy, patent ductus arteriosus, congestive heart failure, low birth weight, and feeding problems. He indicated that these babies were "small, poorly nourished, and hard to feed"; failing often to survive. He indicated that other defects might become apparent as development proceeded. Later, the defects of deaf mutism and mental deficiency were described.

The United States' 1964-65 epidemic of rubella occurred two years after the first isolation of the virus. Isolation of the virus made it possible to make a precise diagnosis of the infection in the infant so that we could learn considerably more about the nature and spectrum of the fetal infection. We now recognize that congenital rubella is not an entity composed of static lesions present at birth but rather a chronic contagious viral disease that begins in fetal life and continues into childhood for an unknown period. The effects of the virus on children born during the 1964-65 epidemic are not yet entirely known. We know only those effects which are present to age ten and eleven years. The magnitude of the problem of the 1964-65 epidemic may be emphasized by stating that 30,000 pregnancies ended in miscarriage or stillbirth, and 20,000 to 30,000 infants suffered

defects related to the congenital rubella syndrome. These defects included 8,000 cases of children with deafness, 3,600 patients who were deaf-blind, and 1,800 children with mental retardation.

The frequency of clinical rubella among 30,000 pregnant women in the Collaborated Perinatal Research Study centers arose from one per 1,000 pregnancies during nonepidemic years to 22 per 1,000 during the 1964-65 epidemic year.

When the nonimmune adult or the nonimmune pregnant woman is exposed to rubella and becomes infected, a sequence of clinical events may be expected. The glandular involvement occurs at the end of the first week. Virus may be cultured from the throat from the eighth to the twenty-fourth day of contact. Viremia is present prior to the onset of the rash and at the time of the beginning of the rash. Antibody rise is detected soon after the onset of the rash. In subclinical infection, which is estimated to occur in 50 percent of the women with the disease, viremia may occur without evidence of rash. When maternal viremia is present, the virus spreads to the placenta and from there to the fetus. In the placenta the most common lesion involves the chorionic tissues with necrosis of the epithelium and fragmentation of the small blood vessels.

The virus may reach fetal tissues as the result of infected emboli or through direct damage to the small fetal blood vessels. Fetal infection differs markedly from the acute but mild and self-limiting infectious process characteristic of the natural disease in children and adults. The virus is widely disseminated within the tissues of the fetus. Not all the cells of each tissue are involved. The virus resides in the nucleus of the cell and may be demonstrated by fluorescent antibody technique to exist in clones or groups of cells. The main mechanisms for production of malformation are believed to be two: (1) cell death; or (2) a decreased rate of cell growth. Both may occur.

Infected cells are known to grow more slowly in tissue culture, and eventually the cell line dies out. If the virus infects the fetus during the first three months, the potential for teratogenetic defect or malformation is high. One may find malformations up to 50 percent in infants of mothers infected with rubella during the first month, 22 to 25 percent during the second month, and 6 to 17 percent during the third month. The damage to the child following rubella in the second trimester may not be as obvious in the newborn period, and repeated examinations may be needed to identify these abnormal children. If the fetus is infected after the first trimester, one may find chronic viral infection without malformation. When the child's development is followed over a period of years, an increased recognition of impaired hearing and an increased percentage of developmental problems occurs. A recent study (Hardy) has indicated that rubella occurring in the second trimester may carry a substantial risk of deafness, microcephaly, and impaired post-natal growth. There is also evidence that preconceptual rubella can result in fetal defects and that maternal infection in the second trimester also carries hazards, although fewer than those following infection in early pregnancy. The spectrum of the response of the fetus exposed to the rubella virus is wide. Spontaneous abortion, stillbirth, live birth with multiple or severe anomalies, and the normal-appearing may be represented in this spectrum. Since fetal infection may be disseminated, it is not surprising that virtually every organ may be involved either transiently, progressively, or permanently. The most characteristic abnormalities are still those described by Gregg: heart lesions, cataracts, and deafness. For this presentation, I should like to emphasize four areas of involvement: (1) ocular defects; (2) hearing losses; (3) rubella encephalitis; and (4) effects on development.

Ocular Defects

Ocular defects occur in from 30 to 60 percent of the infants exposed to rubella during the first trimester. The most common lesion is the cataract. It may be unilateral or bilateral and is frequently associated with microphthalmia. In the majority the cataracts are present and visible at birth; however, they may not be well-developed at birth and may be too small to be detected until the infant is several weeks of age. When fully developed, the cataract fills the pupil and is easily seen

on gross inspection of the eye. Cataracts due to rubella result from viral infections of the lens. Congenital rubella syndrome may be associated with a characteristic retinopathy. This includes areas of discrete, patchy, black areas of pigmentation interspersed with areas of lack of pigmentation, usually most prominent around the macula. Congenital glaucoma is less common but may be present or may develop later.

We note also, in the congenital rubella syndrome, disturbances of ocular movement; i.e., strabismus and nystagmus. Strabismus occurs in a high percent of those children with neurologic involvement. Nystagmus is not usually present until the infant is several months of age and appears to be directly related to poor visual acuity.

Congenital Rubella Encephalitis

Central nervous system involvement in the congenital rubella syndrome occurs during both prenatal and postnatal life. The central nervous system is involved in a variety of ways; i.e., the presence and persistence of rubella virus in the central nervous system and neurosensory structures (eye, ear), the effects of virus on the rate of cell growth, leptomeningitis, encephalitis, vasculitis, retardation of myelination, and the effects of hypoxia, hyperbilirubinemia, acidosis, and hypoglycemia seen during the acute phases of the early disease.

Neurologic abnormalities were noted in 81 of 100 patients followed in the Baylor Congenital Rubella Longitudinal Study. At eighteen months the spectrum of central nervous system involvement included a wide range of motor deficits (cerebral palsy) as well as hyperactivity, restlessness, convulsions, and unsatisfactory progress in development.

Hearing Loss

Hearing impairment is probably the most common manifestation of congenital rubella. In a 25-year follow-up study of 50 persons born in New South Wales with congenital rubella syndrome after the rubella epidemic of 1940, 48 of the 50 were found to have hearing defects. Severe bilateral deafness was present in 43 patients, a combination of severe unilateral plus moderate unilateral deafness was found in four, and mild bilateral deafness in one. Only two of the 50 had normal hearing. In the 48 with hearing loss, only five were identified during the first year of life. The majority were

identified between one and three years of age, but the age of identification ranged up to seven years.

In the Baylor group of 64 survivors studied through three years of age, 46 (72 percent) were found to have a definite hearing loss. In the same group at eighteen months, only 29 (45 percent) had a diagnosed hearing loss, although an additional 17 (27 percent) had poor speech and inconsistent response to sound. Is a hearing loss progressive in this disease, or is the lower percent identified in early life related to difficulties in testing? Probably both factors contribute. Although rubella-connected hearing loss is predominantly sensorineural, conductive losses are often present also, particularly during infancy and early childhood, since middle ear disease is common and may be a manifestation of the active disease.

Congenital deafness may follow maternal infection at any time during the first trimester and as late as the second trimester. The mechanism causing the deafness may include hemorrhage into the middle ear, central neural damage, and destruction of cells of the cochlea or labyrinth. Since the rubella virus remains active long after the initial time of infection, these structures may remain vulnerable through most of gestation and possibly after birth.

In our material, severe neurologic impairment, cataract, and hearing loss tended to occur together. In the Johns Hopkins Study, visual, hearing, and neurologic impairment was more frequent in children tested in the lower IQ ranges.

Early Development of Congenital Rubella Children

Motor development was conspicuously poor during the early months. Head control was achieved at a median age of six to nine months and grasp and transfer at eight months. Walking alone was observed in only 20 of the 64 survivors at eighteen months.

Gesell testing at forty weeks revealed a motor age of thirty-two weeks, adaptive at age thirty-two

weeks, personal-social age at thirty-six weeks, and language age at twenty-eight weeks. At eighteen months motor development had a median of thirteen months, adaptive and personal-social development at fourteen months, and language development at nine months.

Language has consistently shown the greatest delay in these children. As they have grown older, motor difficulties in the majority have lessened or improved under habilitative training. The acquisition of the skills of daily living has been difficult for these children. In those with hearing and visual handicaps, chewing and self-feeding have perhaps been the most difficult tasks.

As a group, children with congenital rubella syndrome tend to show, in addition to their obvious handicaps, many of the characteristics of brain damaged children; i.e., hyperactivity, impulsivity, poor attention span, and sleep disturbances. Eight of our children showed characteristics similar to those described in autistic children. Many showed stereotyped movements and behaviors.

Summary Points

In summary, I would like to reiterate the following:

1. Congenital rubella syndrome occurs in a spectrum of severity ranging from infants with growth retardation, severe multisystem disease and malformations to normal-appearing infants.
2. Congenital rubella is an active infectious disease, whose manifestations emerge with time. Infection may be present without malformations.
3. The hearing impairment may be progressive.
4. The extent of the encephalitis is often the X- or unknown factor which influences the child's ability to learn both at school and at home.
5. Assessing development early during the acute phases of the disease may be difficult.

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Low-Vision Rehabilitation

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The year 1953 was a turning point in the field of rehabilitation. In that year, two low-vision clinics were established. The New York Association for the Blind and the Industrial Home for the Blind (IHB) independently established pioneer clinics of that type.

At the Industrial Home for the Blind, many leading ophthalmologists and optometrists were consulted, and their almost-unanimous conclusion was that there was a need to service the partially sighted legally blind with a new type of rehabilitation that was geared specifically to provide increased visual functioning.

Tens of thousands of seriously visually impaired children and adults in the United States could be helped to function more effectively if proper low-vision services could be provided. It was estimated that there are close to 750,000 legally blind individuals in this country, only 10 percent of whom are totally blind, and this population is increasing at the rate of 15 percent per year. In many cases, blindness and deafness are related. Usher's syndrome, retinitis pigmentosa (R. P.), and deafness are of prime concern to the evaluating professional. As a former consultant to the St. Francis School for the Deaf in Brooklyn, I paid particular attention to the children to determine if R. P. was present so that an educational program could be prepared to best suit the anticipated life-style of the patient.

The technology of aiding the partially sighted was available. Optometrists and ophthalmologists certainly knew enough about vision problems to offer many of these people an opportunity to enter a new life. After establishment of the low-vision rehabilitation service (I must emphasize that a low-vision service must be a total rehabilitation service, not an optical aids program), more than 5,000 legally blind, including a substantial number of deaf patients, were seen in the first 20 years of the operation of the clinic. A majority of those receiving the optometric evaluation have experi-

enced substantial and useful improvement in visual function with the use of the aids.

To be seen at the clinic, the individual had to meet certain requirements, including being classified as legally blind under the New York State definition. Fortunately, we at the University of Houston College of Optometry and the Texas State Commission for the Blind have a much more liberal viewpoint, accepting clients whose visual acuity is as high as 20/70. I believe this liberal attitude is a progressive step in servicing the needs of the partially sighted.

Further, I believe that the client being evaluated should express a desire for the examination, for then the motivation to "work" at seeing again is there.

Preferably, the candidate for service will have some residual vision, as measured by consulting professionals or experienced subjectively by the individual. However, any legally blind or partially sighted individual should be eligible for a low-vision optometric evaluation.

I suggest that the individual be encouraged to think about the specific purposes for which better vision is particularly important to him or her, for instance, the need for reading on the job, for viewing television, and for identifying street signs.

I also suggest that the individual be given a realistic time frame in regard to progression of the total evaluation.

The low-vision optometrist is an integral part of a rehabilitation team in which a variety of professionals, including ophthalmologists, social workers, rehabilitation instructors, and others work simultaneously to create a total program of rehabilitation for the blind or partially sighted individual. Using the interdisciplinary team approach is essential in the field of rehabilitation of the partially sighted. To provide proper rehabilitation for the total individual requires the services of more than one professional integrated into the entire team. Once we professionals realize our function in this team,

we will be better able to serve and service the individual so that he or she may again assume what may be considered a normal functional life.

Each client who applies for the low-vision evaluation is referred first to the social services unit for clearance or "intake" interview. The caseworker interviews the individual to become acquainted with his or her general situation and to discuss the specific benefit he or she hopes to derive from optical aids. The caseworker attempts to learn whether the client is personally eager for optometric low-vision service, or whether his or her request is in response to prodding from some friend or relative; and, in order to prepare him or her for possible disappointment, the caseworker explains that not every case of blindness can be helped by optical aids.

If the client is of employable age and desires employment, the caseworker refers him or her to the vocational counselor and works closely with the latter, especially in regard to the visual requirements of various jobs. He or she also arranges, with the client's permission, to obtain an eye examination report, not more than a year old, from an ophthalmologist, optometrist, or other service where the individual has been receiving eye care and clears this with the State Commission for the Blind for classification as "blind" or "not blind" under the legal definition.

The eye practitioner who examines the patient reports his or her findings with regard to vision, pathology, diagnosis, and recommendations for medical or surgical care or the use of optical aids. He or she also indicates any restrictions on the patient's use of his or her eyes or on his or her general physical activity. This report is an absolute prerequisite to the low-vision evaluation, since it establishes the patient's status with regard to blindness and ensures that the possibility of improvement by medical or surgical care is not overlooked.

When the study of the case and clearance has been completed, a referral for optometric low-vision service is forwarded to the low-vision clinic. The clinic coordinator then arranges for an initial examination appointment.

The coordinator schedules all appointments and serves as liaison between the patient and the professional community. On the first visit the coordinator takes a brief history of the case with special reference to the individual's practical use of his or her vision and his or her most important

visual needs. The coordinator refers the client for an audiologic examination if needed, summarizes the history for the staff optometrists, and interprets the examiner's findings to the client as needed. If the individual has difficulty in using the optical aids and returns to the clinic for help, the coordinator, under the direction of the staff optometrist, gives further instruction.

The social worker's visit, the eye report, and the history taken by the coordinator serve as preparation for the low-vision examination itself. This is a time-consuming, painstaking procedure by which the staff optometrist determines the individual's vision problem. The optometrist brings to bear his or her special refractive techniques and his or her knowledge of ophthalmic lenses and low-vision aids for the purpose of discovering the appliances and conditions which will enable the patient to achieve maximum use of his or her remaining vision. He or she tests the patient's ability to read letters and numbers at varying distances with lenses of varying strength; and adjusts the lighting to determine that which is most satisfactory for the individual. He or she considers the usefulness of such nonoptic appliances as the piosis crutch, the pin-hole disc, the side-shield, and the sun visor. Throughout the examination the examiner maintains an attitude of encouragement so that the patient may put forth his or her best efforts, without feelings of tension or frustration. Added difficulty in examining the deaf client is often tedious and frustrating. However, through communication such as on the palm of the hand or through the aid of someone familiar with sign language, we are able to pursue our evaluation of the deaf-blind.

The examination may require from two to four visits (sometimes even more) by the patient before the examiner is ready to reach a final conclusion. The first session is one of establishing rapport, and forming a basis for a prescription at a later date for the optical aid or combination of aids which will provide optimum results. When the appliances are delivered, the examiner checks the results the patient can obtain. He or she re-emphasizes the importance of correct lighting, of maintaining the posture and reading distance which have been found most satisfactory, and the need for continued and repeated practice in using the lenses to obtain best results. The patient is encouraged to return for further advice if he or she experiences difficulty with his or her optical aids.

We feel that the teamwork approach is of basic importance and that the functions of each member of the team should be clearly understood.

The eye examination involves the measurement of vision and the prescribing of appropriate lenses to provide optimum vision, but in the case of the blind person with residual sight, it involves much more. To most of these patients, who have been cut off from many normal activities, even a slight increase in visual efficiency is important, although the same amount of increase would seem negligible to one with normal sight. It is very difficult to comprehend this visual psychology of the near-blind patients on the basis of experience gathered through general practice. In fact, the concepts associated with visual analysis of the normal-sighted person must be discarded, or they may prevent the practitioner from helping the low-vision cases effectively.

Further, many of these patients have for years been discouraged from using the remnant of vision they possess. In their activities and relationships, the emphasis has been on how blind they were rather than on how much they could see. Time is required to help them make the necessary adjustment and to stimulate the effort to see. Accordingly, the keynote throughout the examination is extreme deliberation, and allowance must be made for the patients' slowness of response. The tone must always be one of encouragement, but absolutely without pressure or haste. Frequent pauses in the procedure give the patient opportunity to relax and to avoid development of tension.

The patient's motivation has been found to be one of the determining factors in his or her successful use of optical aids. If he or she has clearly in mind one or two specific purposes for which he or she expects to use the increased vision (for instance, to read the newspaper or to view television) he or she has a directed incentive which stimulates continued effort. Moreover, if he or she achieves this particular goal he or she is much more likely to feel that the aids are useful, and to be satisfied with what can be done for him or her, limited though it may be.

Special techniques are used to obtain the visual acuity of the partially sighted legally blind. Charts are designed to give distant and near vision readings in small-step graduations. Several charts are usually used to cover the full range. Testing for normal-vision evaluation is done at 20 feet; for the low-vision evaluation, testing is done at 10 feet.

Equipment for these examinations varies considerably from that in general use. Specifically, the testing charts, both for distance and near vision, must be in small-step graduations. From 20/800 to 20/70 is the necessary range in Snellen charts, and several different charts will be required to cover this full range.

For near vision, a variety of reading cards must be assembled to provide a wide range of type sizes—24-point, 18-point, and 14-point, as well as the usual smaller sizes. The cards should include numbers, letters, and simple words.

The examiner must determine the distance at which the reading matter is to be held to assure focal ease and optimum results; and this distance will differ for each individual. In certain cases the patient will need to keep the focus constant and move the reading matter from side to side instead of moving the eyes. In some cases the focal distance will be only a few inches, and the reading matter must be held so close that it has been described as "reading with one's nose."

The illumination needed for optimum results also varies from one patient to another, and several arrangements of lights should be tried to determine which is most satisfactory. The use of side-shields, visors, and similar auxiliaries will sometimes improve visual acuity.

The subjective factor must not be overlooked. No two cases are alike, and the emotional and special implications of eye defects are numerous and varied. To a greater extent than among normal-vision patients, each case will have its own characteristics and problems. In general, the examiner must put aside his or her customary procedure of comparing the patients' vision with a predetermined standard. The examiner must concentrate with all his or her ingenuity and resourcefulness on arriving at the set of conditions—lenses, lighting, distance, focal ease, and posture—which afford the patient maximum efficiency and comfort in seeing.

At present the New York clinic is evaluating approximately 1,000 patients each year. At the University of Houston we are seeing 200 patients. The clinics have consistently been providing substantial and useful improvement in vision through the use of optical aids for a majority of its patients; i.e., over 80 percent of all new patients evaluated over the last five years were able to benefit from the use of optical aids.

In the year 1973 alone, more than 1,000 optical aids were prescribed at the clinic. Over 75 percent

of these aids were fairly conventional-looking spectacle corrections. This included distance-vision spectacles such as distance-vision clear lenses, distance-vision absorptive lenses, distance-photogray lenses, and distance-vision photosun lenses. Prescribed aids also included a wide range of near-vision spectacles, including near-vision clear lenses, near-vision prism lenses, and near-vision microscopic lenses.

In addition, we offer an impressive selection of monocular and binocular hand-held telescopes: telescopes in spectacle form, bifocals in clear and absorptive lenses, and hi-add bifocals, corneal, scleral, and soft contact lenses. Magnifiers of all kinds are also available along with such special equipment as telesights, clip-ons, optiscopes, and closed circuits television. Many of the aids were prescribed to be used in combination; for example, near-vision spectacles could be prescribed to be worn over contact lenses.

As the above inventory suggests, the Low-Vision Clinic has greatly expanded on traditional optometric approaches to low-vision problems, for less than 5 percent of optical aids recommended in 1973 were magnifiers.

In 1958, the IHB Low-Vision Clinic conducted an in-depth study of the first 500 patients. Subsequent clinic experience tends to support the findings of that study.

The majority of patients referred for low-vision evaluation were prescribed for as a result of optometric examination. Those not prescribed for can be categorized as follows:

1. Those who were able to benefit but would not accept special lenses, either because the improvement in vision (which could be realized by their use) was too small, or the motivation to use them was insufficient
2. Those who were unable to benefit from the use of special lenses
3. Those who withdrew before completion of service
4. Those who were already functioning adequately with optical aids privately prescribed.

Patients as young as two years and as old as 100 years have been successfully evaluated at the Low-Vision Clinic. To make any examination meaningful, a reasonably reliable level of communication must first be established. With careful preparation on the part of the examiner, extremes in age, mental ability, and so forth, need not prove prohibitive.

Clinic observation seems to indicate that those who have recently become blind often hope that the optical aids will give them back the sight they have lost; less than this may not seem worthwhile, and they may not make the necessary effort. On the other hand, those who have been for some years deprived of certain visual activities are able to appreciate the value of even a small degree of improvement and are willing to make the effort and tolerate the limitations involved.

Some of the conclusions reached by myself and others as the result of many years of experience follow:

1. The examination and fitting of people who have subnormal vision is a specialist's job. Not only does this require special equipment and an approach different from that called for in general practice but also the time element—an average of three to four hours per patient—is not feasible in general practice.
2. The teamwork approach is essential to the overall success of the program, and each member of the team has a specific part to play in achieving the end result.
3. Definite advantages can be enjoyed in having the optical-aids service integrated into the programs of agencies for the blind or into professional training institutions. These are institutions to which blind people turn for service, and the optical aids service can be readily related to the total needs of the individual, particularly in social and vocational rehabilitation.
4. The patient's motivation is an important factor in the successful use of optical aids. He or she must be able to reconcile himself or herself to unavoidable limitations in the improvement he or she experiences.
5. Even a slight improvement of vision is of great value to individuals who are within the definition of blindness.
6. Training of the patient in the correct use of his or her optical aids and offering follow-up service to encourage him or her to continue to practice their use can be of great importance in enabling the patient to reach maximum benefit.

I hope that this report may stimulate general exploration and encourage specific implementation of low-vision optometric services in agencies and schools serving the blind and deaf.

In conclusion, I feel that the sensitive application of technology to particular human needs has broad implications for future rehabilitation.

ADDENDUM

A number of slides illustrating the uses of microscopes, telescopes, and other aids were presented at the lecture. These slides depicted how the

client should use the aids. Persons working with the partially sighted must be aware of the limitations of the optical aids. We at the University of Houston College of Optometry will gladly aid in training all persons on the rehabilitation team who deal with the partially sighted. Once the professional accepts his or her role as part of the interdisciplinary rehabilitation team, he or she will succeed in rehabilitating the individual to a fuller, more functional life.

Movement in Communication and Language Development of Deaf-Blind Children

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A deaf-blind boy has attended a deaf-blind preschool program for three years and has come a long way. He is understanding paired signs, imitating them, and beginning to use them spontaneously. Consider his use of tactile and visual discrimination in spite of his visual handicap, memory, motor planning, and concepts. An occupational therapist or physical therapist, *if* able to keep up with the boy's manual signing, would have no difficulty evaluating and designing a perceptual-motor training program for him, drawing on the familiar and comfortable theories and methods of Ayres (1966; 1972), Kephart (1960), Cratty (1967; 1970), and Frostig (1964; 1969).

The question is, how did the boy acquire this level of functioning? What steps did he go through, and how would these steps be applicable to the wide variety of deaf-blind children we know? Sensory training and movement training were an important part of his curriculum in preparing for language and communication.

What is language? Language is a learned arbitrary system of sound or visual symbols through which we communicate our thoughts, ideas, and feelings to others. Language is described in terms of three aspects—inner language or meaning, receptive language, and expressive language. We will be concerned today with how meaning develops.

Johnson and Myklebust (1964) have suggested three important prerequisites to language: (1) identification with another human (for the normal infant, that human is his or her mother); (2) imitation; and (3) internalization, or mental representation or imagery. A recent study (Kahn, 1975) supports this relationship between the development of imagery and imitation as assessed by a Piagetian sensorimotor model and the development of speech by severely retarded people. We will relate back to these important prerequisites as we talk about movements and actions.

What is communication? Robbins and Stenquist (1967) point out that not every child develops

language; however, every child communicates, though not always with symbolic behaviors. Even the most primitive child cries when uncomfortable. We will be interested in how to help a child communicate and how to communicate with that child even when symbols are not possible.

We are going to talk about where one starts with a very low functioning multihandicapped child or a very young child. We will review some ideas about nonverbal communication which are pertinent to what we as therapists do with children and describe ways in which we can contribute to communication development or readiness for symbol use. The "coactive movements" and "motor circuit" which have evolved out of van Dijk's work out of Holland will be described and related to communication and language development. We will need to set aside some of our therapy notions and recipes and think of movement and actions in a different way.

Meaning—of People, Things, and Events Outside Himself or Herself

What do sensory organization and sensory input mean? The way the child seeks sensory input and organizes it is the first consideration. While hearing and vision are ordinarily the principal channels for receiving information from outside himself or herself, the deaf-blind child will need to use his or her tactile-kinesthetic channel as much as possible in compensation.

The first thing to observe is whether the child is inward directed for sensory input or outward directed. The term "spaced in" describes the inward-directed child lying on his or her back, grasping feet and hands, kicking and waving arms, rolling head, flicking fingers in front of eyes, mouthing them, or making funny lip sounds. Which sensory modes are involved with what the child is doing? Is the child using any sensory mode to take in environmental input in any way?

Visual fixation and tracking, generalized sound or localization responses, tactile localization

responses, and maintenance of grasp are all outward-directed attention and sensory organization patterns necessary for anything outside the child to have meaning. They are all actions, not passive reception of stimuli. We utilize the *Bayley Mental Scales* (Bayley, 1969) and an adaptation of the *Uzguris-Hunt-Piagetian Sensorimotor Cognitive Scale* (Uzguris and Hunt, 1966) in looking at where the child is in utilizing his or her sensorium for the beginnings of cognitive development. These are applicable to profoundly retarded older children as well as to our infants for whom the instruments were designed. Similar items are included in the various developmental checklists used in many programs.

As sights and sounds outside the child become interesting, the child learns to repeat movements which produce or maintain that sensory input. This behavior is an important step for the child in finding out who he or she is and prerequisite to ever using hands as a means with objects.

The second thing to consider about sensory organization is the central nervous system's ability to cope with sensory input. Johnson and Myklebust (1964) feel that the dysfunctioning brain can be overloaded with more information than the central nervous system is capable of integrating. Sensory deprivation results in underloading—the lack of input needed for growth and normal maturation of psychological and physiological structures. Some of the sensory deprivation research with kittens reared in the dark reported by Riesen (1961) describes some behaviors that may be pertinent to our deaf-blind children and the ways in which we utilize sensory input with them. When the dark-reared kittens were exposed to a lighted environment, they showed perceptual deficits and other behaviors such as violent emotional storms, hyperexcitability, and increased susceptibility to convulsive disorder and nystagmus. If the increase in input was too sudden, the effects were so severe as to produce long-lasting behavior anomalies. Gradual sensory enrichment was less disturbing, but some of the behaviors were never completely eliminated. We need to observe what is happening when we use sensory bombardment with a child and carefully increase coping capacity. I wonder if we want to bombard? Perhaps it would be better for us to remember that perception is an action by the child and to try to provide opportunity for the child to have meaningful sensory experiences.

Case example: A common suggestion a therapist will give a teacher when a child is not accepting textured objects or shows so-called tactile defensiveness on handling is to provide the child with much tactile input, using various textures, brushing, or vibration to rub his hands or body in hopes of desensitizing the child and increasing tactile discrimination. One day I was visiting a class in which the teacher was working with a very young blind child on the mat, rubbing and brushing the child as suggested by a therapist, and the child screamed for 15 minutes. What meaning did this input have? Was it too much to process? A little later the teacher placed a rack over the child from which several toys were suspended. The child reached for these toys and felt them until he found his favorite, one which made a nice sound. This was beginning discriminative behavior and meaningful tactile input. The child acted to perceive. Someone might say that this discriminatory behavior occurred because of the other tactile input, generalizing the results of other research situations to this situation. This is risky, and I know of no research which has been done in this situation. I would be more likely to view the learning in terms of operant conditioning, with the consequence, which is reinforcing, being the important factor.

I have a videotape of a teacher dressing a profoundly handicapped little girl on her lap, utilizing a method called "multisensory dressing." As each article of clothing is put on, it is shown to the child, described, hands guided to feel it, it is touched to the appropriate body part, put on, then again shown to the child, hands guided to touch it—the teacher communicating verbally in an animated way all the while. By the time the child is dressed, you can see her beginning to look and to attend. This input is meaningful and interesting and motivates the child's active attention.

The third thing to consider about sensory organization is the work being published about attachment, bonding, and imprinting (Bowlby, 1969). I recently saw a deaf-blind infant of about nine months who had been placed on the living room floor during waking time; the rug was a fluffy shag, and he rolled around on it. No toys were in evidence; however, a very shaggy little dog lay down by the child and was patted and grasped. Imagine a deaf-blind infant liking fuzzy things! His mother reported that they had not handled him much because of imagined fragility and that he did not like to be cuddled now. I went home and

began reading about young animals' approach and avoidance behaviors in relation to familiar or strange objects at an early sensitive period, and I realized that we as therapists have probably been overusing our concept of tactile defensiveness and that we need to learn more about this area.

We also need to understand more about the development of identification by infants with other humans (Burgner and Edgcombe, 1975; Fraiberg, 1971). Identification is the starting point emphasized by many deaf-blind teachers and comes through meeting needs, loving, sharing, and having fun together. Do you do any of these things *with* children, or are you always doing things to them or commanding them? In the tape segments on contactive mat routines, you will see the teacher in both instances following the movements with an activity the child enjoys, such as jumping together or hugging reciprocally. One can go just so far with positive reinforcers such as edibles. You must find an activity which is fun and involves sharing to have a basis for identification.

What do objects mean? Playing with objects is another important aspect of communication. Children demonstrate their level of preverbal language development and the presence of beginning symbolic behavior through their spontaneous play with objects. When the child indicates the object's meaning is shared meaning, he or she is ready for more formal receptive language training (Robbins, 1973).

Don't be discouraged with the child who only mouths or bangs things. Look at this as indicating the level of meaning that objects have for the child. There is a sequence to the development of meaning of objects which can assist you. This sequence is based on the work of Piaget (1952) and has been supported by a number of researchers (Uzguris, 1967).

The cognitive structures or meanings as shown by the child's actions with objects are called schemas. An object schema assessment is included in the sensorimotor assessment we use in setting goals with our infants or low-functioning older children (Figure 1). The schemas are divided into three classes—simple, complex, and social.

The simple schemas include holding, mouthing, looking at object in hand, hitting, shaking, and banging behaviors. The child who is mainly in this stage does the same things with all objects, incorporating the objects into his or her actions.

Meaning is in visual, auditory, or oral tactile sensations, so that child's sensory handicap will determine which objects are meaningful to him or her. Manual tactile sensation is limited at first to interest in holding or seeing and holding; however, holding which does not result in visual, auditory, or oral gratification doesn't lead anywhere. With the ability to reach and grasp intentionally and the opportunity to experience these simple schemas with many interesting things, the schemas become more and more internalized. The child tries out chains or sequences such as shake-transfer-shake. The child discovers that one toy is a good banger but a poor shaker and indicates growing recognition for the toy and its properties by going right to banging.

As the child learns that his or her repertoire of schemas are reinforcing according to different attributes of objects, he or she develops schemas of the complex class. These are characterized by visual and manual examining behaviors, sometimes examining at the mouth, which is not just mouthing. The child turns, pokes, and feels, finding out the properties of an object. He or she discovers and tries out many new schemas which are based on the properties of objects, such as patting, pushing, rolling, sliding, crumpling, tearing, and stretching. The child drops systematically, picking up and dropping again, and throws with interest in the effects that throwing has on the object. Until the child shows this class of schemas, he or she is not ready for learning things like putting in or stacking. These things may be taught through operant conditioning but may have no meaning for the child unless based on the necessary readiness.

The social schemas include the pointing, sharing, and giving behaviors which are communicative. The child indicates meaning by demonstrating functional use of the object, such as taking the cup to the mouth even though there is no milk in it. This action is representational and stands for what the cup means to the child. The child takes the shoe to his or her foot, puts the doll in the highchair, and loops the beads around his or her neck. The child may name the object by what it signifies, such as "milk" for cup. The child now has imagery and imitation emerging and is showing readiness for more formal symbol training. I would think this type of behavior should be present before training in natural gesture, which is even more representational and symbolic—the child making the drinking movements without the cup in hand.

Children will show considerable overlap between stages or classes of schemas. The child who is enjoying crumpling and tearing paper may still shake, bang, hit, or mouth it. He or she may show functional use of very familiar objects of daily living such as cup and spoon, then bang them or throw them. Assessing the child's schemas with a representative sample of objects which provide the opportunity for many schemas of each level will give you a good starting point. You may want to simply check which schemas you see in a period of time, such as two minutes per object, perhaps noting a *one* or a *two* for the first things the child does. Robbins suggests designing activities with objects based on the level of development of the child's objects' meanings (Robbins, 1973).

What you can do is help the child expand simple schemas across very interesting and novel objects by imitating his or her actions and by prompting him or her when introducing similar objects. For example, if the child hits the chimes, give the child a Happy Apple, Tippy Clown, balloon with bells, or a chime ball. Try to expand the hitting to the pushing down on the keys of the "Whistling Songbirds" or to banging with one object on another. If the child bangs the stick on the xylophone, teach him or her the sliding action. Give the child things to play with that invite examination and new actions. If the child has enjoyed shaking a bell or rattle, then give him or her the round rattle ball, and he or she may begin to explore it and poke fingers in the holes or roll it. The "same but different" novelty principal will provide guidance. Share and use both nonverbal and verbal communication as you play. Some of the first objects for which the child develops functional use representation are those used in eating and then maybe grooming or dressing. The Brickers (Bricker and Bricker, 1971; 1972) have developed a language program based on the child's sensorimotor cognitive development, utilizing training in functional use of objects behaviors as preparation for formal receptive language training. They have also devised a developmentally sequenced imitation assessment which may be helpful to you in addition to other imitation work. It is important to emphasize that the first meanings attached to objects and the communication that develops around them should occur in the daily life situation or context as deaf-blind children may not have the imagery established for going right to the more artificial situation. When the child responds appropriately to the cup in mealtime context, you

might then try it in a context away from the meal where the behavior requires further development of representational behavior.

Signal and Symbol

Robbins and Stenquist (1967) have described a hierarchy of spontaneous interpersonal communications which can help us in understanding a child's communication level and give us ideas of ways to communicate with a child in everything we do. These are divided into two general groups—signals and proto-symbolic behaviors.

Symbols or language involve mental representations and concepts, while signals are a lower level of communication indicating wants. When a child pulls the adult to the sink for a drink or signs a well-conditioned potty sign, these are signals—and they involve a physical immediateness. Symbols are more reflective and involve understanding by a child that symbols represent things—and once that light bulb flashes a child begins to really develop language. Symbols involve being able to think about objects without manipulating them. Van Dijk (1965) talks about "increasing the distance" between the child and objects or events. The term "proto-symbolic behavior" describes prerequisite nonverbal behaviors which are representational in nature and which follow a sequence of development.

Robbins and Stenquist (1967) have presented a useful checklist of the hierarchy of nonverbal communications. Starting at the lowest level these are:

Signals

1. Cries; smiles (expression of feeling, state, or attitude)
2. Anticipates daily routine; time sense based on physical needs
3. Tugging, pulling at, pushing vaguely about
4. Leads people; places adult hand on objects
5. Anticipates on basis of physical situation; definite participation

Proto-symbolic

6. Pointing (to get something wanted or to direct attention to something shared)
7. Pantomimes to self
8. Smiles at people
9. Gestures referring to immediate physical situation, object present
10. Gestures referring to past, future, or more abstract ideas
11. "Sentence" gestures
12. "Story" gestures

The proto-symbolic behaviors in a child are the first signs of potential symbolic ability. Most of these are below a three-year level. Pointing is probably the earliest representational reference to objects; this may be a bodily gesture, eye signal, or a vocalization such as "da." This is basic to using a word to refer to the object in mind and indicates some separation or distance of the child from concrete behavior. Both the physical point and the object are present. Rather than grasping or taking the object in, pointing is directed outward to the object. Earlier steps leading up to this are of course touching to grasp, examining, or pointing-touching the object as an indicator. How many times do you use pointing or its sublevels to cue a child, and how many opportunities have you missed to model and encourage this type of behavior?

Smiling in its lowest form is a signal of feeling, state, or attitude and means "I feel good" or "I enjoy this activity." The proto-symbolic form is a greeting, sharing, smiling *at you*. It is a communication with you, not just enjoyment of an activity which is pleasurable and in which you are both involved. Further differentiation of expressed feeling is also a significant step toward language—surprise, doubt, pleasure, displeasure, anger—rather than vacant faces. How much do you model these feelings and smiling?

Gesturing includes nodding "yes" or shaking the head "no," pointing from object to self to indicate wanting or ownership, pointing to tell where to put something or to indicate direction, pictorial gestures which describe the appearance of objects, and imitation of the actions related to the object. Facial expressions can also be gestures. Through gestures and pantomime we can refer to things, actions, situations, and ideas without need for any physical reference point. Gestures are for sharing and telling, not just for satisfaction of wants. Many teachers have found action gestures to be more meaningful for deaf-blind children than pictorial gestures, reflecting probable importance of tactile-kinesthetic imagery for them.

The normal deaf child uses gesture to express inner language. The retarded child without speech and limited inner language may not have any or may have only very simple gestures. The autistic child may not communicate to you with gesture but may use some symbols in his or her own play.

Vocalizations at the proto-symbolic level are early precursors of the use of voice as a symbol. They are called "call-sounds" and are short vocali-

zations uttered together with reaching toward an object. They may be used for particular situations and eventually show more intonation. The usual deaf child learns by age two that he or she can attract attention in other ways than with his or her voice. When a child uses voice in combination with pointing, this is evidence of ability to reflect on things outside himself or herself and the desire to communicate. Encourage and reinforce this desire. When the child points to the cookie and vocalizes, this is a good start. Acknowledge, "You want the cookie," with voice and sign if appropriate. When this type of behavior is reliable, require the next step, an approximation of the word or a gesture.

Acknowledge and encourage the deaf-blind child's efforts at communication. Robbins and Stenquist (1967) suggest:

1. Respond to the child's signal behaviors such as holding up arms for "Swing me!" tugging when he or she wants a drink, or taking your hand to the toy to make it work. Provide the opportunities for the child to use such signals. Reward all levels of communication; you may model back the higher level. When the child tugs for a drink, you can say, "You want a drink," point at the sink, give a "drink" sign, and so forth.
2. Do things—looking, acting, moving—together to establish the child as a separate person from the world and from you. Look for situations in which he or she can recognize that you are both doing something and in which it is appropriate to look at you. "Look at me" programs in which an edible reinforcer is popped in the child's mouth and nothing meaningful in his or her terms happens may be less productive than "Look at me and feel and see my mouth make this sound." Sometimes I feel like saying to teachers, "Why should the child look at you?" They will answer that it is the first step in their language training, meaning for the teacher, not necessarily for the child. How often we fall into the trap of using negative reinforcers that outweigh the positive reinforcer we have planned.
3. Teach pointing and gesturing by cueing the child's attention and by modeling. The teacher may set specific objectives for gestures to work on. When bringing out toys, why not let the child point to the one preferred? If the child only reaches for it,

model pointing and guide his or her finger to point with touch.

4. When a child is being taught to use gesture and sign, show the child that symbols are not only for obtaining wants but can be used in a telling or sharing way.

Sometimes signal levels of communication or gestural levels of communication are realistic expectations for a child who probably is not going to develop real language. Other times these methods are a step in preparation for more formal signs. Deaf-blind educators have developed a variety of types of signal communication (Smith, 1974). Mike Collins, in his "New Techniques" proceedings, has described—for the child who does not imitate—a multitactile approach so that the child can convey wants and feelings. The teacher may indicate what is expected of the child by a touch prompt to a specific body part, such as touching the child's hand, meaning "Scoop." The teacher may manipulate the child through very simple points or gestures which involve touching a place on the body, such as hand to mouth as a simplified "Eat" sign. Guiding the child's hand can then be faded to giving the child only a touch cue to the part of the body you expect him or her to touch. Will Costello describes contact communication in which touch cues are paired with signs, such as the "Sit" sign paired with a press on shoulders or the "Shoe" sign paired with a tap on the bottom of the foot. Debbie Dinwiddie describes gestural signs such as tugging on pants for "Potty" rather than the usual "T" sign. The child who has acquired a receptive vocabulary through operant conditioning and long practice is also at a signal level of communication. Signs, gestures, or contact signals should be relevant to the child. Begin with things the child really enjoys or wants—"Cookie," "Jump," or "Ball." Remember that signals are used to indicate wants; although the child may learn to understand other signals, he or she is not apt to use them spontaneously if they do not indicate wants.

Movement Programs Designed for Communication

Many teachers of deaf-blind children have used prelanguage movement programs to help prepare for imitation and symbolic behavior. These have included the "Coactive Movements" and "Motor Circuits" programs based on the ideas of Jan van Dijk, Director of the Department for Deaf-Blind and Aphasic Children at the School for the Deaf in St. Michelsgestil, Holland (1965). Many teachers

have learned van Dijk's methods from Lieke De Leuw while she was at the Michigan School for the Blind. Teachers have interpreted these movement programs somewhat differently from place to place and have adapted them to the needs and level of their children, including severely handicapped deaf-blind children with cerebral palsy. The following material is based on various teachers' training experiences with Ms. De Leuw and their experiences in application.

The typical motor circuit or coactive movement program is designed not only to increase motor coordination needed for exploring and exploiting the environment but also to establish the following: differentiation of self from other; identification with teacher; memory and imagery through tactile-kinesthetic channels as well as vision or sound; spatial concepts; and finally imitation and readiness for use of the body as a medium for representation.

Motor circuits or obstacle courses consist of equipment arranged in a sequence designed to enlarge gross motor and body perception experiences, sequential memory, and inner language in indicating understanding of what occurs with each object. Reciprocity or communication occurs with the teacher when the child holds up arms or indicates he or she wants more of whatever the child is experiencing. Circuits for ambulatory children can include equipment that provides some particular experience specific children need, such as stair climbing, but should also include fun things. Higher-functioning children have enjoyed elaborate climbing arrangements and building their own circuit.

With a group of lower-functioning but ambulatory children, circuits might be more repetitive, consisting of only three or four items. The same arrangement would be used until the children indicated that they remembered what came next and what to do. A sequence might consist of something to crawl under, climb over, and to walk on or in. Then one component would be changed for a new piece of equipment requiring the same general action, thus extending the actions to include other objects. Sometimes we might try a week during which all units required the children to crawl under objects, hopefully leading the idea of "under" as a spatial concept, not as a specific object. During such an experience, communication appropriate to the children would be stressed and opportunities provided for the children to respond.

With cerebral palsied children a sequence of events to which the child can respond with minimal assistance is desirable. The child might rock on a tiltboard or sit-and-rock chair, crawl under an arch, swing in a blanket, or roll in a barrel. Sometimes one gets the impression that some teachers believe certain movements are somehow specifically related to cognitive or language development and that all children must follow the same routine. There is, however, no magical routine or movements or equipment; what the teacher or therapist does and its relevance to the child prepares the child for language.

Therapists can help teachers design motor circuits which are geared to a child's maximum participation and which are safe. This is especially important with some immobile severely handicapped children whose bones may have become very fragile with demineralization. One just doesn't swing such children by ankles and wrists or somersault them off of a big ball.

Motor-circuit time is not the time to have the child do something which is so difficult that he or she loses sight of the purpose of the circuit—for example, moving from one piece of equipment to the next one on a prone scooter board. When the child is just beginning to learn to use it and may lose sight of the goal, it might be best to keep the distance very short and to be sure the next piece of equipment is positively reinforcing for the child. You will have to weigh your purpose of motor training and communication-language training and may decide not to include the scooter in the circuit.

Sometimes the therapist must look the other way when a child moves in a way the therapist doesn't like—for example, a little girl crawling on her tummy with wrists flexed as she moves to the next piece of equipment. This is not therapy time. If you feel strongly that an independent locomotor pattern a child uses is harmful even in the short distances involved, you might consider moving the child but asking her, "Where do we go next?" and requiring a point or look. Therapists might also consider sequencing events more systematically in therapy with fun activities combined with hard work.

Our circuits have been developed with equipment usable in a classroom in a daily routine. Other programs will involve a more elaborate circuit set up in a gym or activity room. Similar activities can occur on a playground. Circuits can

be part of classroom, recreational, or therapeutic activities.

The sensitivity and familiarity of the person working with the child are important to make the most of the communication and thinking possible. You might have one person follow the child through the entire sequence. Other programs have found it practical to have one person or more stay at each "station" of the circuit and pass the child from one to another. If the children are at all aware, they can be encouraged to sit and watch each other so that imitation can take place as well as learning to wait their turn.

Cathy Callen (1974) describes a hierarchy of stages of responsiveness:

1. "Put me through."
2. "Let me do a little, put me through the rest."
3. "I know you want me to do some motor tasks by myself and I know you want me to do this one now."
4. "I know that after I swing, I crawl, and that after I crawl, I get tossed."

Perhaps you will want to design your own way of keeping score based on the communication hierarchy previously described and the characteristics of your children.

Coactive Movements

In coactive movement routines the teacher and child both do the activity in preparation for imitation and symbol use. As the teacher and child move together, the activity establishes a basis for a symbol meaning the same to both, not "This is what the teacher does to me here or this is what I do with this object." Actually, coactive movements comprise just one stage of the van Dijk Movement Program but have become shorthand for the whole thing. The program consists of six stages: resonance behavior, coactive movements, nonrepresentational reference, motor imitation, natural gesture, and language. We will spend more time on the first three stages because they are most applicable to our low-functioning or very young deaf-blind children.

Stage I. Resonance Behavior

Resonance behavior is passively guided movement, at best "active-assistive" in therapy jargon. At first, the child may resist the movement as threatening. When the child begins, he or she is still within his or her body and doesn't know his or her

parents, teacher, or self. The objectives of resonance behavior are: (1) beginning development of body scheme and image, the child's knowing where the arms or legs are and that the child exists separate from objects and other people; (2) beginning building of anticipatory behavior; (3) beginning of development of self-help skills as the teacher guides the child through eating or washing his or her hands or as the teacher attempts to elicit cooperative limb movements in dressing. Resonance behavior is also the beginning of a relationship: enjoying an activity and smiling at the teacher.

The basic procedure involves manipulating the child through a sequence of movements within his or her repertoire and capability. Activities such as rolling, seat-scooting, creeping, knee-walking, or walking across a mat are commonly used. Distance between the teacher and child is essentially eliminated; at first the child may be placed between the teacher's legs for seat-scooting or creeping. The beginning and the end of the mat are emphasized as cues. Some teachers prefer to start the sequence close to the floor, others will start with walking. Because of tactile stimulation, rolling may be too upsetting to some children initially. The teacher will move forward with the child across the mat and then return backward, or the teacher may walk around and back to the beginning, whichever is most practical. Eventually one wants to move both forward and backward. Gradually, the teacher senses the child following along and even anticipating the movement. At this point the child is moving into the coactive stage, and the teacher reinforces the child's participation and anticipatory movements with praise or edibles.

Other curriculum activities which coincide with the resonant stage of movements include working with localization of sound, using operant conditioning to reinforce and expand a child's vocalizations or imitating his or her vocalizations, visual fixation, tracking, shifting of gaze and beginning search, and beginning to act on objects and simple schemas. These activities suggest that the child is shifting from self-directed input to environmental input.

Stage II. Coactive Movements

Coactive movements are defined as those movements involving the teacher and child moving together. The child follows the teacher's movement and is developing increasing awareness of what the

teacher's body is doing. Some "distance" is beginning to develop between the teacher and child as the child can now move along beside the teacher and as the teacher pauses to give the child a chance to anticipate or continue a movement. The distance to the reward at the end, which may be jumping together or a ride on a ball with a somersault off, is also increasing.

The procedure at this stage is very structured at first, utilizing the same movement patterns the child started during the resonance stage. When the child begins to imitate in the sequence, the teacher will vary the sequence or do the same movements with the child in other situations. Changes are introduced to create interest and attention. The teacher and child move forward, backward, and sideways. Simple problem solving may be required, such as doing the routine with an obstacle to duck under or climb over. In addition to saying the action word, this is a time for great vocal expression and contagion—"Whee!" "Up!"

Now that the child can cooperate, a great variety of experiences—running and splashing through a wading pool, walking in tall grass, running down a hill, conquering play equipment, helping the child discover the world—can be shared more easily.

This is a time to systematically increase distance, and keeping a record (see page 26) is a way to be sure to monitor oneself to give the child a chance. Let the child watch you take the position for the next activity, and then let the child join you; let the child watch you do the entire activity, and then let the child imitate it. Commonly, the child will imitate the locomotor pattern before he or she will imitate the posture.

Many teachers feel that socks and shoes should be taken off for these activities for increased sensory awareness, and this becomes a good time to also work on dressing and communication relating to this activity.

Bench routines can also be introduced. We have used a board and two chairs for this. On the bench you can sit astride, or sit with both legs to one side, scoot with one foot up, crawl, walk, and slide. Limb movements can be started—first bilateral, then unilateral; first sitting facing each other on chairs, and then standing. Objects can be incorporated into the sequence, such as a chair (to step up on and down from or to stand beside, to stand in front of or behind), a table, a box, a ladder on the floor, or a hula hoop. It is important to introduce such variations gradually, however, with the child

doing fairly well in one sequence before the next is introduced (Figure 2).

The teacher can increase distance by requiring the child to imitate short chains of familiar actions, such as sit down, scoot, stand up, and walk back. Complex sequences may finally be possible (e.g., cross and uncross legs, lie down, scoot on back, stand up, turn around, and hop back).

Children in this stage of movement are apt to be responding to many other curriculum activities. The children will learn to perform body movements in response to the presence or absence of sound and the tempo of the sound, fast or slow. They enjoy feeling sound and vibration and will move to the source of sound in a room. The Tadoma method of having the child feel your mouth and throat as you talk is good for getting the child's attention. Object permanence concepts are developing, and a child will enjoy hiding games and will remember where to find a favorite toy. The child increasingly examines the properties of objects and is ready to learn new uses for familiar objects. He or she can begin to match objects, form, color, and size as his or her concepts of "sameness" grow around movements and things. The child enjoys formboxes, simple puzzles, pegboards, and Montessori equipment, and he or she knows "beginning" and "end" and when the task is "all done."

Stage III. Nonrepresentational Reference

The nonrepresentational reference stage actually overlaps in time and teaching with the coactive and imitation stages. The nonrepresentational reference stage involves recognizing and indicating body parts in more detail and the use of pointing behaviors and increasing distance. Imagery is developing. It is a stage which prepares for more advanced imitations.

The procedures begin on the child's own body and progress as follows: (1) rubbing body parts in a meaningful situation such as bathing or dressing; (2) pointing to a body part with touch; and (3) pointing without touch. The teacher points to the part, guides the child's hand, and the child then points. You can start with a fixed sequence as in one of the body perception records but vary the sequence in time to avoid rote learning. The sequence then progresses to the imitation of pointing to body parts between teacher and child, or child and child, body and doll, and then to another media such as clay, or a tracing around the

child's body, and the drawing of pictures. Although we think of babies learning parts of faces very early, it is probably wise to begin with body parts that are visible. When you progress to body parts which are not visible, work with a mirror. Many children enjoy activities at this level, such as decorating a body part with a sticker, colored marking pen, tie, shaving foam, or soap suds. They will sometimes begin to indicate body parts by using a hoop or other object to place on the part.

Stage IV. Motor Imitation

The purpose of the motor imitation stage is to create generalized imitative behaviors, to develop the refined body perception and motor planning necessary for finer imitations, and to increase the distance between the child and world. The child's attention will be maintained by varying the activities in novel ways. Perceptual-motor fun activities can be based on a number of sources, such as Ayres (1972), Kephart (1960), or Cratty (1967; 1970). Problem-solving situations can be planned in which the child is challenged to think and draw on experiences. For example, when something the child wants is placed high out of reach, and he or she is told to get it, the child moves a chair, steps up, and goes after the object.

A progression of levels of imitation is described in the following sequence: (1) The child imitates familiar movements or sounds which are visible and audible—such as making an "O" with his or her hands or vocalizing "O" in the mirror with the auditory trainer; (2) imitates familiar movements or sounds which are not visible and audible to himself or herself; (3) imitates new visible and audible models; (4) can transfer the imitation to another part of the body—for example, the teacher hits the table three times with his or her hand, and the child stamps his or her foot three times; (5) imitates new models not visible and audible where he or she must use some trial and error and approximates these; (6) imitates new models directly; (7) defers imitation; and (8) imitates pictures. Good pictures of body postures and movements are often included in developmental learning materials and magazines. Once the child can imitate the pictures, the child then progresses to imitating stick figures (Figure 3).

It is good to have the child make up a movement that the teacher or other children must imitate. Children also will enjoy building their own circuit or obstacle course.

The child at this stage is interested in matching pictures, matching objects to pictures, and may begin to match actions, objects, or pictures to written sight words. Other curriculum activities will involve folding, cutting, copying simple lines and forms and block designs, and tracing. The child may begin to learn finger positions for the manual alphabet in simple imitative activities, or he or she may spell his or her name.

Stage V. Natural Gesture

Natural gesture is a movement that represents an object and is the beginning of true representational communication. Natural gesture can be a step toward manual or oral language or an end goal. At this point, the teacher will be reaching some conclusions, if he or she hasn't already, as to what will be the primary mode of language instruction for the child.

The first step in training the child in the use of natural gesture is to observe the objects or events for which the child shows appropriate use and recognition. One might use some of the same objects as were used in training the child in the functional use of an object. The gesture which represents the action may be more meaningful than that which describes its appearance; thus a ball is represented by the throwing motion rather than circling the fingers. Take advantage of every opportunity to teach natural gestures. When a child brings you a blanket because he or she wants to be swung, teach the child to make the swinging motion with his or her hands. Progress from gesturing with an object to using a gesture describing an experience. Ask a child with a gesture, "Do you want to play ball?" The child gestures "ball," and you get the ball out. Hopefully, the day will come when the child initiates "ball."

Robbins and Stenquist (1967) have suggested that the child's expressive use of natural gesture is a positive sign that the child is capable of generalized symbol use.

Stage VI. Language

In choosing the method for a mode of communication at the language level, one must consider the following factors: (1) degrees of residual hearing and vision; (2) age and mental ability; (3) finger dexterity and motor planning; (4) tactile defensiveness and discrimination; (5) earlier experiences and training; and (6) the child's emotional and social responsiveness.

The beginning instructional method and the final method may be different. Most children will need to start with a total communication approach; only a few will go on to oral speech. Whether the child can learn visual lipreading or will require the Tadoma method will depend on his or her vision and tactile discrimination. The ability to use regular or enlarged print for reading will also depend on vision and on hearing. The ability to use finger spelling will depend on reading, and the ability to perceive finger spelling will depend on vision or on touch acuity. Some children will require braille and must be able to match these symbols with finger spelling or writing in the child's palm with regular alphabet. This is like being able to speak several foreign languages! The distance at which these abilities are demonstrated will also determine the practicality of a method and the educational setting in which the child can function.

Decisions regarding which method to use will be made by the child's teacher or language specialist. Therapists working with children who are into formal symbol use need to be informed exactly what symbols are being used; the therapist can reinforce these. The therapist can contribute ideas to the teacher with regard to motivating activities on which communication and language can be built. The close cooperation and hard work of all who are involved with a deaf-blind child will be required to bring the child out of himself or herself into communication with the world.

SCHEME ASSESSMENT

Name _____

Date _____

Scheme		Rattle	Neck-lace	Car	Doll	Doll shoe	Rubber bands	Bell	Paper	Cup
SIMPLE SCHEMES THAT INCORPORATE OBJECTS	1. Holds object over 30 sec									
	2. Brings object to mouth									
	3. Brings object before eyes or holds and looks at it									
	4. Holds object and looks around the room									
	5. Hits object with hands									
	6. Hits object on surface									
	7. Hits two objects together									
	8. Holds and bangs on other palm									
	9. Shakes or waves object									
	10. Alternate transfer									
COMPLEX SCHEMES BASED ON PROPERTIES OF OBJECTS	11. Examines object visually/manually									
	12. Examines object manually or with mouth									
	13. Pushes object									
	14. Rolls object									
	15. Pats object gently									
	16. Brings to ear									
	17. Slides object									
	18. Crumples object									
	19. Stretches object out									
	20. Attempts to tear									
	21. Drops object systematically									
	22. Throws object									
SOCIAL	23. Shows object to another person									
	24. Functional use of object									
	25. Names object or related word									

SCORE SHEET - STAGES I, II, III

Name _____

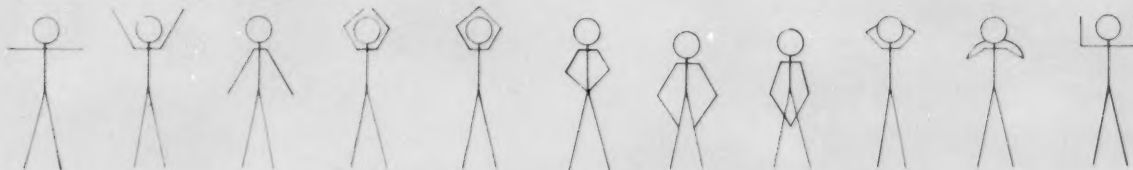
Date _____

Postures and movements	Resonance			Coactive movements						Nonrepresentational reference					
	Control - Btw.			Some Control - side			Let Go	Child watches, waits		Looks or localizes when part rubbed	Points to part after guided to point-w/touch	Points to part after teacher points-no touch	Teacher points to self, child points to self	Child and doll	Child and picture
	Resistance	Passive cooperation	Beginning participation	Active participation	Continuous movement started	Placed in posture; begin movement	Imitates posture and movement in sequence	Deferred imitation posture and movement	Deferred imitation and movement						
Mat— Walk forward															
Walk backward															
Knee-walk forward															
Knee-walk backward															
Crawls forward															
Crawls backward															
Seat-scoot forward															
Seat-scoot backward															
Rolls															
Bench—Walk forward															
Walk backward															
Sit astride forward															
Sit astride back															
Seat-scoot forward															
Seat-scoot back															

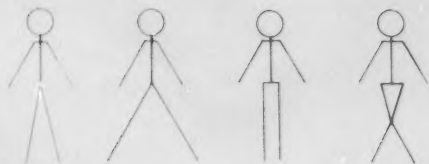
MOTOR IMITATION

These can be used for direct imitation or stick figure drawings on cards for the child to imitate.

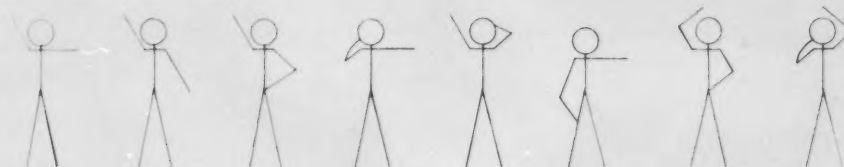
1. Symmetric arm positions



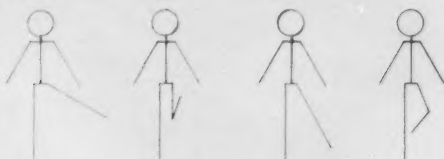
2. Symmetric leg positions



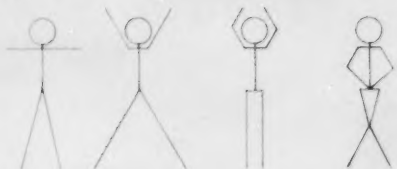
3. Asymmetric arm positions



4. Asymmetric leg positions



5. Symmetric arm and leg positions

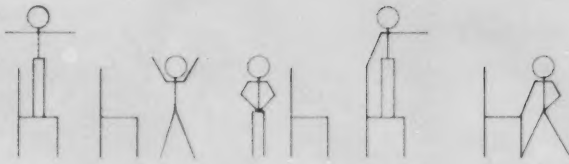


6. Asymmetric arm and leg positions

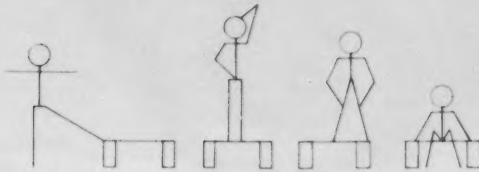


7. Relation of person to object

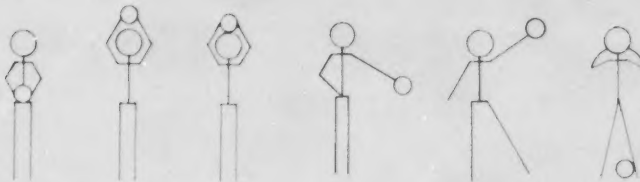
Chair



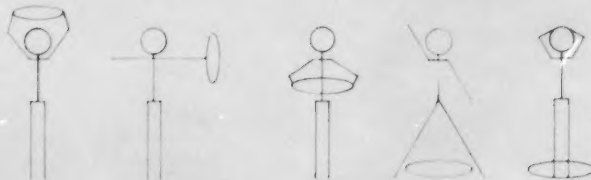
Bench



Ball

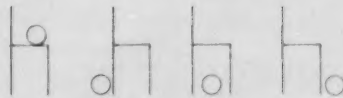


Hoop



8. Relation of object to object

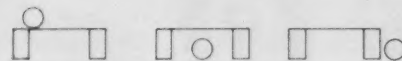
Chair and ball



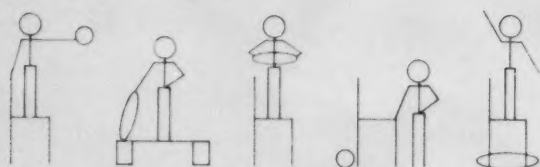
Chair and hoop



Bench and ball



9. Relation of person to two objects



10. Postures and movements in side profile

Limb postures



Trunk and limb postures



Movements



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A Teacher's Approach to Sensory Stimulation of the Nonambulatory Deaf-Blind Child

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Sensory stimulation is a technique used in the classroom and at home with the low-functioning, nonambulatory, deaf-blind child. When I say "low-functioning," I am referring to those children who have been assessed to be at the sensorimotor process level of function. Sensorimotor refers to the first process a child goes through to learn about the world. The normal child spends many months at this sensorimotor level, gathering sensory input which initiates and guides motor output. The information the child acquires during this period stimulates perceptual development and provides the cognitive foundation for assimilation of new information. The deaf-blind child, because of sensory impairments, receives insufficient sensory input to stimulate cognitive development. The deaf-blind child responds to sensory input with reflexive and disorganized motoric behavior. For example, the normal baby experiences the family cat. The baby smells it, sees it, hears it, touches it, and may even taste it. He or she has gathered the necessary sensory information to guide his or her motor output. The child may move toward it, move away from it, reach for it, or push it away. Later, when the child is forming concepts, this early sensorimotor experience will allow him or her to easily assimilate the concept of "cat." We have to be sure that the deaf-blind child gets all of the information he or she needs about the cat to make the same conceptualization. Otherwise, the deaf-blind child may only experience the cat as a soft tickle across the arm, apparently from out of nowhere. The deaf-blind child's motor response might be a reflexive jerking of the arm. The child could never take this information and build on it.

The teacher's job, then, is to give the child more sensory information. And, more importantly, the teacher must make sure that sensory information is offered to the child in an organized, integrated, meaningful way.

Sensory stimulation, as a classroom technique, has matured in recent years. Not too long ago the

teacher's approach to sensory stimulation was very different from what it is today. The reason for providing sensory stimulation was the same—to give the child a foundation for cognitive growth. In the past, however, the information did not have to be organized, integrated, or meaningful; it just had to be sensory experience. The practice was to take the child into a dark room to stimulate his or her vision with a flashlight. Then the teacher would take the child to a sound-proofed booth where the child would receive auditory training with buzzers and bells. Next the child would be taken elsewhere for tactile stimulation which included rubbing shaving cream, cornmeal, and burlap over the child's body. What could those activities mean to the child? All of a sudden, a light enters his or her world, flashes around for a while, and then disappears. The child has no idea where it came from, where it went, or even what it was. The technique was not providing a cognitive structure on which the child could build. The child is not likely to encounter other experiences in his or her life which this stimulation technique could help him or her to understand. If an activity does not have meaning for the child, we cannot expect the child to learn from it.

In the real world, the deaf-blind child will never have simply visual experiences, or simply auditory experiences, or simply tactile experiences. Therefore, the child cannot be taught to deal with input into only one modality at a time. If he or she is taught in that manner, the child will develop visually, auditorily, and tactilely, but the child will never know how all of these fit together to experience a whole. If the child's sensory experience is segmented, what will happen to his or her motor patterns? Bobath says that the learning of movements is entirely dependent upon sensory experience and upon sensory input which not only initiates but guides motor output.

Another very important thing to consider is what the child is doing while he or she is being

stimulated. A child learns by moving and acting upon his or her environment. This stimulation technique makes the child passive: the child learns to wait for the environment to act on him or her. The child is not getting involved in the experience.

What could the goals have been in providing segmented sensory stimulation for the child? They must have been to make the child see more accurately, hear more accurately, and be less defensive while the child was being prepared cognitively for language. My opinion is that this type of stimulation leads to segmented cognitive development which would impede the development of language. The biggest problem that a parent has in dealing with the deaf-blind child is not the child's sensory impairments; it is that the parent cannot communicate with the child, and the child cannot communicate with the parent. That is the problem we all have in dealing with these children, so we must help the child develop communication skills. Sensory stimulation, then, is only important insofar as it helps to organize and integrate the child cognitively so that he or she may acquire language. Sensory stimulation should never comprise the child's whole program; it should be used to help the child organize his or her world.

I have talked about why sensory stimulation is important and how not to use it; so let us talk about how it could be used. In my opinion language development should be the key area of emphasis in the child's program. But along with language development goes cognitive and social development to help the child to become a thinking, communicating, interacting, independent person. The teacher must work with the parents and other professionals to design a program for each child which will help the child to progress in these three areas. After observation and assessment, we develop goals for each child in these areas plus the areas of motor development, perceptual development, and self-help skills. From these goals we design activities which will implement our objectives. These activities have to implement and integrate our goals; and they have to be meaningful for the child, relevant to real life situations, and organized and structured so that the child may better organize himself or herself and may begin to learn what to expect. Each activity, then, should be designed not only to stimulate all of the child's senses but also to speak to all of this other needs—motor, self-help, language, cognition, and socialization—in an organized, meaningful way.

Let's take an activity a child might do during the day and see how sensory stimulation can be integrated into it. Coactive movement is an activity in which the teacher and the child move together. It is designed to help the child progress in the areas of language, cognition, and socialization. It is a motor activity, so it can be used to implement motor goals. The child is required to move during the activity so he or she is getting kinesthetic and vestibular stimulation. The teacher could define the area in which the activity is done by outlining or covering the space with a textured material. This helps the child to learn about the area in which he or she works. If the child needs added inducement to get him or her to participate in the activity, the teacher could reinforce his or her efforts with an object that has been found to be stimulating to the child. For example, the child could be presented with a flashlight or a bell to play with momentarily upon completion of a movement pattern. The teacher could also provide auditory stimulation and attempt to develop the child's sense of rhythm by having another person ring a bell or pound a drum rhythmically as the teacher and the child move. The teacher may want to sing a rhythmic song which would end as the movement ended.

Many deaf-blind children do not know very much about their bodies because of their physical impairments. The teacher could use a bathing activity to help the child discover his or her body. The teacher can have the child pour water over his or her limbs and trunk and help the child to use the soap and the washcloth appropriately. The child could help to apply lotion after the bath. Thus, the child is getting the tactile stimulation of the water, the soap, the washcloth, and the lotion while learning about his or her body. The lotion and the soap may also offer olfactory stimulation for the child. The teacher might want to give the child one-word language cues to label the parts of the body. This offers auditory stimulation to the child. The child may also receive the stimulation of hearing the water running into the bathtub, which might help cue him or her as to what is about to happen. What I am saying is that every activity should be designed so that the child is offered stimulation of each of his or her usable senses.

To sum it all up, sensory stimulation is a technique which is used in the classroom and at home with the low-level deaf-blind child. Stimulating the senses of these children is necessary because they do not get enough sensory information to stimulate cognitive growth. This

stimulation must be offered in an organized and meaningful way and must be integrated into all of the child's activities during the day. Again, sensory stimulation is only important when it contributes to the achievement of socialization, cognitive, and language goals.

Now, where does the physical therapist, the occupational therapist, and the recreational therapist fit into all of this? Every deaf-blind child should have a consistent, structured program so that he or she may become organized and integrated. This is especially true for the low-level children, who take a long time to become comfortable in a new environment because they can never be sure they are safe. If you were getting little or no information through your senses and you were seemingly abandoned in a strange place, you would be afraid. It would take some time for you to adjust and feel comfortable in your new surroundings. The normal adult has at least 20 years of information gathering which helps him or her to know what to expect. The low-level functioning children do not have that. These kids do not feel safe with anyone. I worked with seven children last year, and of these seven there was only one child of whom we could be sure that she knew that her mother was different from other people and that she could trust her. These children have difficulty in developing relationships. If the child is uncertain about his or her environment and uncertain about the people he or she is with, it is difficult for that child to learn. We have had

children who have moved away in the middle of the school year and have entered other programs in other towns. To each new school we send reports through which we describe the child's functioning level. We also send a current videotape. The new teacher is always amazed that the child on the videotape is the same child who has just entered his or her program. The child on the tape seems active and curious while the child in person seems lethargic and withdrawn. The new teachers are not doing anything different; the child has not yet adjusted to the new environment and the new people. What I am saying is that these children need to feel comfortable in one environment with one person before they can be expected to function well in another environment with another person. My opinion is that the physical therapists, the occupational therapists, and the recreational therapists should not take the deaf-blind child out of the classroom and demand that he or she learn about a new place and a new person. The child should not have motor training in one place and everything else back in the classroom. Motor training should be integrated into every activity during the day. The therapists are needed as consultants to teach the teachers and the parents to teach the children. We need you to help us assess the children, to plan integrated programs, and to evaluate the children's progress at regular intervals. The parents, the teachers, and the therapists have to work together to ensure that all of the child's needs are met.

Sensory Stimulation: The Role of the Therapist and the Special Educator

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To effectively comprehend and apply sensory stimulation techniques with the multi-impaired child, one must have a thorough knowledge of motor development and most importantly one must understand the components of each developmental milestone. To be able to recite the major milestones of head control, sitting alone, and walking is not sufficient; the *intervenor* must understand the components of the milestones. The intervenor must understand the developmental process of the normal postural reflex mechanism and the environmental influence on normal developmental patterns.

The Normal Postural Reflex Mechanism

The normal postural reflex mechanism is composed of the righting reactions, which "get you up and turn you around"; the equilibrium reactions, which "maintain your position in space"; and normal postural tone which is "low enough to allow movement" and "high enough to maintain posture."

The development of the normal postural reflex mechanism in the baby causes the diminishment of mass movement patterns of flexion and extension and brings in the third important dimension of trunk rotation. The development of trunk rotation in turn produces selective trunk strength, trunk mobility, and equilibrium reactions.

Let us analyze for a moment the simple movement pattern of a child rotating up to sitting. The key word to this pattern has already been stated: *rotation*. The child has to be able to coordinate his or her pelvic girdle, his or her left shoulder, and his or her right shoulder to be able to selectively place his or her hands down and push up to sitting.

For a child to rotate up to sitting, the trunk must have the strength to support the child's body weight on his or her hands, trunk mobility to rotate his or her upper trunk over his or her lower trunk, and equilibrium to maintain the sitting position once he or she assumes it.

The normal postural reflex mechanism has to be sufficiently developed for this movement pattern to occur. The mass tonic reflexes must be integrated before the postural reflex mechanism can really take hold.

Environmental Interaction

A child's early repertoire of movement behavior is not dependent only upon the developing postural reflex mechanism. Equally important is environmental interaction. The child must be motivated to move. With the sensorially intact child, environmental interaction comes naturally—the baby turns to noise; visibly pursues objects, smells, and tastes; touches objects and food—all within the immediate environment and all done with gusto. We must keep in mind that normal babies interact with their surroundings with all their senses simultaneously. What happens then to the sensorially impaired child? He or she is at a disadvantage in exploring his or her world. The visually impaired baby often avoids the prone position as he or she feels more secure with his or her entire body in contact with the floor. He or she doesn't lift his or her head spontaneously due to lack of visual excitement and often, because of this lack of environmental stimulation, he or she is subsequently delayed motorically.

The Total Child Approach

The interaction of the child with the environment is more than just a stimulus to enhance the development of normal movement patterns.

Motor development is not a separate entity from all the other developmental processes in the child. Language, socialization, vision, and auditory development are all intertwined in this developmental process. We cannot separate a child's movement repertoire from the total being because the movement repertoire is an expression of the total being. We must remember that all movement is the outward expression of man to the environment. We

are unable to dissect man's brain to see what he is thinking. We are only able to observe this by his actions.

The Motor Base for Learning

The normal child reacts to the environment as a total being. How can we relate this reaction to the sensorially impaired child? His or her sensory impairments don't stop at the periphery. The multitude of sensory impairments cause a total lack of organization. Impairments produce an inability to integrate sensory input to produce an organized motor output. The main intervenor in the educational program is the teacher. The multi-impaired child often functions like a newborn infant, unable to organize his or her behavior and, therefore, completely dependent upon the primary care giver. The mother organizes the newborn child's entire day. She gives meaning to the child's life by scheduling, and through this scheduling the child learns to anticipate events, which is the beginning of the socialization process. He or she progresses from the newborn, who reflexedly sucks anytime an object is introduced into the mouth, to the six-week-old infant, who reflexedly sucks at the sight of the bottle in anticipation of being fed. The child reacts with mass movement patterns to let his or her caregiver know that he or she is anticipating feeding time.

By three months, the child has a definite social smile. He or she anticipates being picked up by mommy or daddy by rapidly flailing his or her arms and legs. The child still does not have the selective motor functions necessary to crawl over and pull up to daddy's legs. People must still come to the child.

The child, then, from as early as six weeks onward is learning to perceive events. Not until crawling becomes part of the child's repertoire of behavior is he or she able to interact freely and to explore. The motor act of crawling begins at the sensorimotor level of functioning. The child gets up on hands and knees and rocks back and forth to gain the strength and equilibrium necessary for crawling. The first attempts are uncoordinated. The child moves for the sheer enjoyment of moving. Not until this motor act is perfected is the child able to use it at a perceptual level of functioning. The day comes when he or she crawls to the toy to play with it. The child has gone beyond the sensorimotor stage of movement and

has entered into the perceptual stage of movement. At the same time the child is crawling at a perceptual level and is beginning ambulation at a sensorimotor level. No complete delineation exists between the levels of functioning, and they are interchangeable.

Adults often use a cognitive level of motor functioning. In learning to play tennis, learning is an example of the cognitive level of motor functioning. As beginners we must think where to put our feet and how to swing the racket. We are cognitively producing the movement pattern. As we progress, however, the movement pattern comes more naturally and we can think about where to place the ball instead of how to swing the racket. We have, therefore, let the motor movement take on a perceptual level of functioning. I suspect that tennis professionals move on a sensorimotor level of functioning.

Thus, the three interwoven levels of motor functioning are sensorimotor, perceptual, and cognitive.

The Therapist As a Consultant

The consultants to special educational programming have a unique responsibility. The educational system is not based on the medical model. The therapist cannot be treatment-centered and give the maximum benefit. The therapist serves as consultant, teacher to the family, and educator. He or she must have the strong skill of transmitting information to others. The therapist must be able to supervise and adjust treatment programs to meet the child's, teacher's, and family's needs.

He or she must give the teacher and family a firm understanding of basic techniques of positioning, handling, and other rudimentary activities of daily living, especially with the care-givers of the nonambulatory child because how a diaper is changed does make all the difference in the world. The therapist must look at the total child. Are the child's emotional and social needs being met? Is the motor program integrated into the daily routine or just the exercise routine? Does the educator and family understand and follow through appropriately? Does everyone communicate openly? Does the child have adaptive equipment at home as well as at school?

The integration of the therapies into the field of special education is a new frontier. It is ready and waiting for you. Welcome.

Creative Dramatics: Sensory Stimulation and Creativity for the Multiply Handicapped Child

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The creative drive is basically as much a part of the multihandicapped child as it is part of any child anywhere. The fulfillment of the creative drive is important to any child and enables him or her to live a richer and happier life. This creative drive must be fostered through the encouragement of originality in action and thought. A child must be directed toward exploration and encouraged to try new ways and new combinations; he or she must be encouraged to use mind, body, motion, feelings, senses, and spirit—the total self—to create. Importance must be placed upon fostering self-confidence in his or her own ability and upon his or her freedom to use that ability in a judgment-free creative environment.

Creativity can be encouraged through participation in many recreational activities. I am especially interested in creative dramatics and would like to present an analysis of the various areas of creative dramatics. This will give the recreation leader, therapist, teacher, or parent of the multihandicapped child some useful and practical ideas on how to implement creative dramatics with multihandicapped children. Some additional resources will be explored and an overview given of the values creative dramatics hold in the stimulation of the child's senses, the development of his or her creativity, and in the enhancement of the child's enjoyment of life and leisure.

Creative Dramatics for Every Child

A 1960 White House Conference on Children and Youth took note of the valuable contribution of creative dramatics (McIntyre, 1963). The conference recommended that every child be given the opportunity to participate in creative dramatics. Many educators and specialists in creative dramatics have written subjectively concerning the values of creative dramatics for the exceptional child. Three excellent books dealing specifically with creative dramatics for exceptional children are: *Creative Dramatics for All Children* (Gilles,

1972); *Creative Dramatics for Handicapped Children* (Schattner, 1967); and *Informal Dramatics for the Special Pupil* (McIntyre, 1963). The authors of these books indicate that in exceptional children creative dramatics can produce positive therapeutic changes, such as increased self-confidence, self-expression, and personal responsiveness plus better socialization. The authors also indicate that creative dramatics activities provide a great variety of stimulating experiences and opportunities for the development of creativity within the child. Through four years of actual experience working with children of all ages and disabilities in creative dramatics, I have observed the therapeutic values of creative dramatics and firmly believe that this activity can be adapted for use with any exceptional child.

Why then do we not see creative dramatics being used with many multihandicapped children? I believe that the creative experience has been denied to many handicapped children because we have not recognized the creative drive in these children and have been rigid in our own approaches to activities. When we consider creative dramatics, perhaps the typical image of a school play pops up, and we ask: How could the nonambulatory, possibly nonverbal, nonsighted child ever participate in such an event?

Our first mistake is in assuming that creative dramatics is limited to an almost formal type of play production that is usually performance oriented and is typically a far cry from what creative dramatics should be. Our second mistake is to deny our multihandicapped child any experience because we decide that the child will not "get anything out of the activity" or that it is out of the child's range of perception. We must learn to adapt and sequence activities so that every child can enjoy them. We must set aside our judgments of what can be perceived and what is fun, for we are *not* able to accurately judge these elements from the child's perspective.

On that final note, I would like to encourage all persons working with multihandicapped children to explore with an open mind and positive attitude the area of creative dramatics as an avenue with great potential value for stimulating the total development of the child.

The following sections will define creative dramatics, describe its various activity areas, and provide the reader with specific activities and ideas for the participation in creative dramatics by multihandicapped children.

Creative Dramatics

Creative dramatics is usually a group activity that involves pantomime, creative movement, story telling, role playing, dramatization, and puppetry. It differs from formal drama in that it does not use props, scripts, or audiences. It is totally free of right or wrong; every individual's attempt at solving the problem created is valid. It is success-oriented, letting every child participate and develop at his or her own rate. The major objective of creative drama is not the development of little actors but rather the development of the whole child.

The term "creative dramatics" defines a group activity that encompasses many different yet related activities. These activities are generally viewed on a continuum of difficulty ranging from simple or initiating activities, to developmental activities, and finally to higher-level activities. Initiating activities are used to introduce all children to creative dramatics and would be the most applicable to the developmentally young multihandicapped child. These activities include creative movement, pantomime, rhythms, dramatic play, and story telling. Developmental activities such as characterization and story dramatization would be introduced to most children after they have mastered pantomime skills. These developmental activities should not be denied the multihandicapped child, for he or she may participate in them coactively with the aid of a leader, or he or she may participate as a spectator in a group with other children. Finally, higher-level creative dramatic activities such as playmaking and puppetry would be introduced to children who have mastered pantomime, characterization, and story dramatization skills. One may think that this level of activity would be beyond most multihandicapped children, but I can recall a fantastic skit and many enjoyable puppet-play experiences with young

deaf-blind children last summer; therefore, the word "can" should be given at least a fair trial before we say our children cannot participate in these activities. By integrating young "normal" children into the creative dramatics group, the total group's participation increases and the scope of the applicable activities broadens. It is suggested that whenever possible this integration of children be practiced to provide a more stimulating atmosphere in which normal children, rather than adults, serve as models and leaders. The adults should help direct the activities (using the ideas and suggestions of the more capable children) and help the lower functioning children participate through individualized instruction and coactive participation.

The broad area of creative dramatics can be broken down into small activity areas that are usually engaged in sequentially as a child develops. The areas are: (1) creative movement; (2) dramatic play; (3) story dramatization; (4) playmaking; and (5) puppetry.

Creative Movement

Creative movement is the exploration of body parts and movement potential, both locomotor and nonlocomotor. Creative movement involves investigation of body parts, shapes, self space, group space, and the elements of movement (direction, force, level, and speed). The multihandicapped child can engage in creative movement coactively or independently. Activities such as moving to music; moving in different mediums, i.e., sand, grass, or carpet; exploring body parts and their potential movement; responding rhythmically to music; imitating animal movements and creating dances—all stimulate the multihandicapped child through his or her visual, auditory, tactual, and kinesthetic senses.

Dramatic Play

Dramatic play is simply pretending, and this comes naturally to most children. Playing house or doctor is an example of dramatic play in which a child pretends to be something or somewhere else. Examples of various phases of dramatic play are: imitative sound and actions; acting out bits of nursery rhymes and familiar home experiences; imaginary companions; make-believe in playing with toys; dramatic use of rhythms; exploring costumes and makeup; and imaginative play after hearing poems, songs, and stories.

Pretending may not come naturally to the multihandicapped child who has limited avenues of perception through which he or she can gain experiences to imitate, explore, and create from. We as leaders must provide multisensory experiences for this special child so that he or she can participate in dramatic play.

Story telling can be made more stimulating through the use of large pictures, tactual objects, video cassettes, filmstrips, records, and puppets. Pretending can be a multisensory experience if costumes, makeup, masks, and other "real" props are used in the make-believe play.

Story Dramatization

Story dramatization is creating an improvised play based upon a story. Guided by a leader who tells the story and helps the children realize its dramatic possibilities, the children play the story out with spontaneous dialogue and action.

For the multihandicapped child, participation in story dramatization is an opportunity to be a "star," something he or she doesn't often have a chance to be. The leader who shares a simple story or well-known tale will first tell the story and analyze the plot with the children. "What are the characters and what do they do?" Children choose a character they wish to be, or they may be assigned one depending on their ability. An important must is that everyone be involved in the portrayal of the story, and everyone must have a chance to be a star so the plays are short and replayed often with a change in cast. Costumes made of simple paper, or hats, or simple props designate each character. Not everyone can be a character so some children pretend to be chairs, trees, animals, or other items in the story.

As an example of story dramatization with multihandicapped children, "The Three Bears" could be played as follows:

The leader narrates the story. Three children are bears (paper ears, and so forth). Three children are bowls or porridge (nonambulatory children seated Indian fashion, arms circled). Three children are chairs (sitting, kneeling, or lying), and three children are beds (flat on the floor—could even be two children making one bed, thus involving six children), and of course one *Goldielocks* (a more capable child, a coactively movable child, or perhaps a leader). The leader tells the story as the children are acting out the story. If a child is verbal, the leader cues him "and the Papa bear

said... (points, touches, and cues the child to make a response, reinforces any attempt) in a gruff voice." Rousing applause and some good hugs are the players' ovation for participation. Now the characters switch roles, and the story is replayed.

Puppetry

The final area of creative dramatics that is applicable to multihandicapped children is puppetry—not a formal puppet show for the children, which is far away, hard to hear or see or feel, but rather the use of puppets with children in a creative improvisational situation.

A puppet is something that is animated by a puppeteer. A puppet can be a naked hand, a marionette, a paper bag, a rod puppet, a shadow puppet, a hand puppet, or anything the puppeteer chooses to use. For the multihandicapped child a puppet must be something that he or she can experience. This requires that a puppet be tactually interesting (made of various textured materials) and visually existing (brightly colored, sparkly, large). The puppet should motivate kinesthetic senses (the child can use it himself or herself, i.e., hand puppet; body puppet—large cloth stuffed puppet that has elastic at head, feet, and arms and attaches to same on child; simple marionette; shadow puppet—light source on a sheet to make shadows) and be audible (puppeteer interacts directly with the child and his or her puppet).

Puppets aid in the stimulation of aural, visual, tactual, and kinesthetic senses as well as feelings, or the inner senses. Puppets can help add specialness to the telling of a story, can be used in story dramatization by the children, or may be used in simple improvisational dramatic play. The use of puppets can provide children with a fun experience that should not be denied any child.

Examples of Creative Dramatic Activities

The following list includes some stimulating creative dramatics activities for use with multihandicapped children. Everyone can participate (coactively or independently). You may use them as idea seeds to expand upon.

1. Rhythms

- a. Clap to various beats of music.
- b. Move one body part to a rhythm.
- c. Make a movement and a sound that goes with the movement (i.e., shake and hiss, strike and yell).

- d. Move like the animal you hear (record).
Move like the machine you hear (record).
 - e. Musical chairs (you know the rules); adapt by using tactually perceptible rug squares for a crawling game of musical chairs, or use colored paper bases for wheelchairs to be "safe" on. Children love to be in charge of putting the music on and off. It gives them a great sense of power.
2. *Action songs*
Songs with actions are great fun for all children. The children listen, sing along if possible, and follow the actions in movement. Coactive participation is possible for all children.
3. *Rhythm band*
Making music is part of the exploration of rhythm and movement. Children can be involved on some level depending on ability in using simple instruments. Try coffee can drums; plastic bottle rattles (full of beans); rhythm sticks (anything wooden knocked together); sand blocks (paste sandpaper to blocks); sound bottles (blow into a bottle neck); pitch bottles (glass jars filled with varying amounts of water and struck with a spoon); and kojoos (the old comb covered with wax paper and tied with a rubber band). String instruments (guitar and autoharp) are great tactually as well as sound-wise for stimulation but are expensive and breakable. Children can listen, move, and beat to recorded music or create their own music, playing follow the leader making new rhythms or simulating a traveling band (ambulatory kids marching, nonambulatory kids riding a wagon float).
4. *Creative movement*
- a. Move through various mediums, both real and imaginary (i.e., slip and slide, sand, cold water, warm water, a pile of hay, cotton, yarn, film, and balloons), or move as though in a hot frying pan or in a pile of squishy toothpaste.
 - b. Show, through movement, the texture that you feel (pull scraps of various textures out of bag) e.g., scratchy—rough movement; cardboard—stiff movement; and cotton—soft movement.
 - c. Move the way the music makes you feel.
 - d. See how many shapes you can make.
- e. Imitate animal movements.
 - f. Show how many different ways you can move a finger or other body part: fast, slow, up, down, and so forth.
 - g. Follow the leader (circle of children; one child leads others in a movement, everyone gets a chance to lead).
 - h. Create human sculptures.
 - i. Create human pictures (imitate the people in a real picture).
5. *Story telling*
Hold the child close, let him or her feel your words, warmth, and inner emotions. Built-in participation books that smell and feel as well as good picture books help make stories exciting. Many books are accompanied by records.
6. *Puppetry*
- a. Make puppets—paper bags with features cut out or colored on, finger puppets drawn with markers on fingers, or hand puppets made from socks are all suitable for young children.
 - b. Improvise a story with the children and their puppets.
7. *Story-dramatization*
Play out simple stories with the children as described earlier in this paper. Stimulate action by filming or taping the stories. Children who can see or hear love to see or hear themselves.
8. *Dress-up play*
Explore the textures of costumes in dress-up play. How does a stiff ballet skirt compare to a smooth silk slip? Collect old clothes and hats and provide free-play and story dramatization opportunities for the children.
9. *Makeup*
Explore the experience of face painting. Theatre makeup or old lipstick, eye-shadow, and other cosmetics provide great fun, creative, and sensory opportunities. Let's all be Indians, or pirates, or fair princesses. This activity can be integrated into story dramatization and play making or enjoyed for its own sake. Cold cream and lots of old towels are necessary additions. Sight stimulation is provided when a child gets a glimpse of himself or herself in a mirror. Have you ever smelled cold cream or tasted lipstick?

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Goodridge, Janet. *Creative Drama and Improvised Movement for Children*. Boston: Plays, Inc., 1970.

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McIntyre, Barbara. *Informal Dramatics: A Language Arts Activity for the Special Pupil*. Pitts, Penn.: Stanwix House, 1963.

This book was written especially for use with the retarded child. The 1960 White House conference on children noted the valuable contribution of creative dramatics. Its recom-

mendation suggested that every child be given the opportunity to participate in creative dramatics under qualified leadership. Cites the objectives of creative dramatics and outlines steps in presenting dramatics to the retarded child.

Schattner, Regina. *Creative Dramatics for Handicapped Children*. New York: John Day Co., 1967.

The land of song, dance, poetry, music, stories, and make-believe is often denied to the handicapped child. Yet, these experiences are vital for the child's growth.

Wampler, Martha M. *And Early Sing Creativity and Participation with Young Children*. Los Angeles: Institute Press, 1973.

This book includes Orff-Schulwerk exercises that are defined as musical and poetic expression in language and gesture; a beautiful book of "seeds."

Puppets

Batchelder, Marjorie, and Virginia L. Comer. *Puppets and Plays, A Creative Approach*. New York: Harper and Brothers, 1956.

This book is a rich source of ideas for construction of all kinds of puppets; includes a great bibliography.

Wall, L. V., G. A. White, and A. R. Philpott. *The Puppet Book*. Boston: Plays, Inc., 1965.

This book is great for everybody's needs, all ages, and all abilities.

Finger and Action Plays

Finger Plays. Compiled by V. L. Dieckman, Wayne University, College of Education, File No. 6744 (10 pp.)

Finger Plays and 1-2-3 Rhymes. Kindergarten Division of the DTA.

Hall and Palmer. *Story Plays for Little Children*. Boston: Lothrop, Lee and Shepard Co.

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Clure, Beth, and Helen Rumsey. *Through the Day. (I Can Do It: Manipulative Books, Series 2)*. Los Angeles, Calif.: Bowmar Publishing Co., 1968.

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Joslin, Sesyle, and Katharina Barry. *Spaghetti for Breakfast: And Other Useful Phrases in Italian and English*. New York, N.Y.: Harcourt Brace Jovanovich, Inc., 1965.

Keats, Ezra Jack. *Goggles*. Illustrated. New York, N.Y.: Macmillan Publishing Co., 1969.

Kraus, Robert. *Whose Mouse Are You?* Illustrated by Jose Arvego. New York, N.Y.: Macmillan Publishing Co., 1970.

McCloskey, Robert. *Make Way for Ducklings*. New York, N.Y.: Viking Press, Inc., 1941.

Sendak, Maurice. *In the Night Kitchen*. Illustrated. New York, N.Y.: Harper and Row, Inc., 1970.

Where the Wild Things Are. Illustrated. New York, N.Y.: Harper and Row, Inc., 1963.

Creative Movement

Dimondstein, Geraldine. *Children Dance in the Classroom*. New York: Macmillan Co., 1971.

This book explores investigation, improvisation, and movement spontaneity. The author states that all children must experience basic locomotor movement patterns, because they serve as a basis for more complicated patterns. How many of our handicapped friends have poor locomotor movement? How many could use some creative movement? They will enjoy and grow with it.

Gilliom, Bonnie C. *Basic Movement Education for Children: Rationale and Teaching Units*. Reading, Mass.: Addison-Wesley Publishing Co., Inc., 1970.

A fantastic resource that gives rational objectives and guides for a continuum of teaching units for beginners to teens.

Joyce, Mary. *First Steps in Teaching Creative Dancing*. Palo Alto, Calif.: Mayfield Publishing Co., 1973.

In this great book the author outlines how you can guide the child to develop the "craft" of self-expression. The language is movement.

Murray, Ruth L. *Dance in Elementary Education*. New York: Harper and Row Publishing Co., 1953.

This good resource is used as a bible in the creative dance movement. It provides an excellent background for creative dance and goes on to more formal types of dance learning experiences.

Vick, Marie, and Rosann M. Cox. *A Collection of Dances for Children*. Minneapolis: Burgess Publishing Co., 1970.

A card file of all kinds of creative movement and dance exercises.

Records

Music for the multiply handicapped child should be varied in pitch and tone and should have a

definite beat. Most contemporary music (i.e., rock and roll) is suitable. A few specifically well suited resources follow:

Educational Activities Records: P.O. Box 392, Freeport, N.Y.

Basic Rhythms HYP R7

I'm Not Small AR 547

Pre-Square Dance ED R 120A

Drum Talk and Going Places AR 47

Sing 'N Do Albums 2-11

Action Songs and Rounds HYP-508

Songs and Activities for Children with Special Needs K-0602

Rhythmic Parachute Play KEA 6020

Learning Basic Skills Through Music AR 514

MOVIN AR 546

Getting to Know Myself AR43

Columbia Records

Switched-on Bach MS 7194

Sesame Street Carry About and Others CC 75001-CC75006

Folkways Records

Sounds of Animal Series FX6124

Scholastic Records

Sounds of Insects, Science Series SX6178

Foresman and Co. (Creative Playthings, Inc., Princeton, N.J.)

Sounds I Can Hear Series

(1) House; (2) Farm; (3) Transportation; and (4) Schools Records and Pictures.

Infant Stimulation Resources for the Multiply Handicapped Child

Compiled by
Carol Stensrud
Therapeutic Recreation Consultant
Recreation Education Consultant
University of Iowa
Iowa City, Iowa

Stimulation Environment Resources

Hogan, Paul. *Playgrounds for Free*. Cambridge, Mass.: MIT Press, 1974.

Making Places, Changing Spaces: In Schools, at Home, and Within Ourselves, Farallones Scrapbook. Farallones Design Star Route, Point Reyes Station, CA 94956. A great book on environments, playgrounds and using trash material.

North American Recreation Convertibles, Inc. *NAR Equipment for Regular and Special Programs*. P.O. Box 758, Bridgeport, Conn. 06601.

Stimulation Activity Resources

Caney, Steven. *Toy Book*. New York: Workman Publishing Company.

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Edward, Brian. *Purnell's Busy Fingers Book of Games to Make and Play*. Purnell Books, Bers-

hire House, Queen Street, Maidenhead, Berkshire SL6 England, 1974.

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Hoffman, Sandra. *Infant Stimulation—A Pamphlet for Parents of Multiply-Handicapped Children*. Kansas University Medical Center, July, 1973.

Marzollo, Jean, and Janice Lloyd. *Learning Through Play*. New York: Harper and Row, 1974.

Parent Counseling and Infant Stimulation. Denver, Colo.: Mountain Plains Regional Center for Services to Deaf-Blind Children, 1973.

Program Development in Recreation for the Deaf-Blind. Edited by John Nesbit and Gordon Howard, Iowa City, Iowa: University of Iowa, 1974.

Robbins, Nan. *Educational Beginning with Deaf-Blind Children* (Perkins Publication No. 21). Watertown, Mass.: Perkins School for the Blind, June, 1960.

The Teacher and the Child Functioning at the Self-Help Skills Level

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"Basic self-help" deaf-blind children can demonstrate a wide range of functioning levels and ages. Therefore, the primary criterion for a child's inclusion in this category is simply that he or she lacks the performance of a basic self-help skill; e.g., eating, dressing, toileting, bathing, or some other facet of personal hygiene. Children can lack these skills for several reasons: (1) physical, intellectual, or emotional inability; or (2) lack of opportunity to develop such skills. Therefore, the child's previous environment as well as his or her present "apparent" capabilities in the physical, cognitive, or emotional realms must be known before an effective educational program can be developed. As the program is implemented and a primary relationship is established with the child, modifications may be necessary. Teacher-child rapport is a crucial educational factor affecting the child's motivation to perform tasks and consequently his or her whole program. Establishing this rapport requires time for the teacher and child to share experiences and learn about each other.

Currently, great emphasis is being placed on the acquisition of self-help skills. But acquiring independence in this area represents only one of many areas in the overall development of a child. The teacher must establish a set of developmental goals for each child. Then these goals must be implemented through various activities. To me, language and cognition have the highest priority. Every opportunity must be made to develop these abilities which serve as the core of development. My role as teacher is as an "environmental engineer," constructing situations with multiple purposes, i.e., activities which have language, cognitive components together with motor components, daily living skills, or sensory training. Language and cognition cannot be fully developed unless they become part of every activity a child does. The concept of one-purpose activities seems to be wasteful in terms of time, as well as unrealistic,

because of the multidevelopmental nature of human beings.

Language and cognition can be used as integral components in self-help situations. A teacher must gather information about the child—how he or she adapts or interacts with environment and other people; how he or she uses objects; how he or she satisfies needs; how he or she functions motorically, visually, and auditorily; as well as determine the child's interests and motivators.

For example, Jay is fascinated with light; he positions himself in the path of the light rays. He also can hold a balloon and nylon sheet. His grasp appears well controlled, but he does not engage in too much hand exploration or visual examination of objects. He does use his mouth—biting and mouthing a flashlight. Whether this is truly exploratory is questionable. Jay spends the entire time lying on his back, occasionally extending his neck and kicking his legs. He seems very content to remain in this situation.

Compared with Jay, Richard is much less active, sitting in the reverse tailor position and occasionally lowering his head to the floor to hyperventilate. At one point he grasps a block and brings it to his mouth. His open mouth and protruding tongue suggest that he is anticipating the block's arrival and has associated it with something to be consumed. When he gets the block to his mouth, he rubs it on his teeth for a few seconds. Then he loses his grasp of the object. Once the block is out of his hands, he makes no attempt to retrieve it. Richard does not visually inspect the objects around him. He doesn't appear to visually direct any motor movements. Even when he grabbed the block, Richard did not look in that direction or visually examine it.

Richard apparently receives very little sensory input except tactually, whereas Jay uses vision as well as tactile and possibly gustatory explorations. Both seem poor in manipulating and functionally

using objects; they use things in self-stimulatory schemes.

Many more observations will be needed to build a complete picture of the children. But from this one sequence, we can see how complex and multifaceted the behavior of these two are.

Language and cognitive training can be included in such daily living skills activities as dressing and eating. Richard is the first to eat. He is on a system of tactual communication, cues for action performed by the teacher on Richard's body. Cognitively, the teacher is looking for indications of memory, anticipation of a sequence of events (routine) associations, signal behavior, and functional use of objects.

Leading Richard to the table by his left hand, the teacher gives him the chance to turn in the direction of the table to show that he is anticipating the next step in feeding or that he is associating the table with eating. As Richard approaches his chair, he receives two pats on the bottom, the tactual signal for "sit," and has one hand placed on the back of the chair and the other on the table, another cue to indicate where the chair is. Before the bib is put on, his chest is stroked. As soon as the teacher is seated, Richard reaches out with his left hand in anticipation of the feeding routine. Richard holds on to the teacher's wrist as he is spoon fed. Richard is required to pull the teacher's wrist toward his mouth to get the spoonful of food. These signals could be used with other tactile cues—"eat" being a tap on the mouth with the palm or a finger, "drink," a fist to the mouth. Not all of these should be used in one spoon-to-mouth-to-plate cycle. They should be presented singly and repeated sporadically during the meal. Richard opens his mouth in anticipation of the spoonful of food; his kinesthetic senses, and perhaps other senses, alert him.

The goals during meals are to (1) build anticipation of eating sequence—walk to table, sit, bib on, eat, bib off, stand up, and walk away; (2) encourage associations such as functional use of objects and movement (holding); (3) improve fine motor—grasping and pulling my wrist for every spoonful of food or holding the cup; (4) begin rudimentary language through tactile communication; (5) refine eating skills—lip closure, tongue mobility, chewing, and even hand-to-mouth moves.

Jay assumes a more involved role in eating. Although he is not quite ambulatory, he can walk with support. I must provide support, yet allow

Jay to direct his walk, i.e., the functional use of walking as a means of getting to the breakfast table. Once at the table, Jay demonstrates good eating skills—scooping with help and drinking as well as holding spoon and cup. Language training for Jay involves gestures—a fist to the mouth represents eating with the spoon, an open palm reach in the direction of the glass is an expressive gesture for drink. The goal for language is to refine Jay's signals and encourage expressive skills. This can be incorporated into another goal, for example, chewing. To encourage chewing, Jay's jaw is manipulated up and down. This also becomes a cue when done before the food enters his mouth, telling him, "Here comes food which you must chew." Jay resists chewing food. In effect he is using this rudimentary communication as a warning. He reacts by spitting the food out. Toward the end of the meal, he is much more accepting and the jaw manipulation has been reduced to a touch, a more refined (less gross) signal. Other gestures include pushing the plate away at the end of the meal and turning the empty cup upside down. Both of these are "finished" signals.

Another goal is to reduce light play with the left hand. By making eating contingent on the absence of eye poking, Jay has learned that during meals only functional behavior is acceptable. He resorts to eye poking during times of frustration.

During meals we work on many goals for Jay, including (1) receptive and expressive gestures; (2) functional use of movement and objects; (3) anticipation of sequences in the eating routine; (4) vision training—using vision to locate spoon, plate, glass, location of food on the plate before performing the motor act to obtain them; (5) eating skills—chewing, scooping, drinking; and (6) gross motor—walking to and from table.

For dressing, Richard is guided through a structured sequence: (1) the body part to be clothed is rubbed with his hands; (2) he is manipulated to touch the article of clothing; (3) the teacher puts the clothing on; (4) Richard is manipulated through the final motion; and (5) the clothed body part is rubbed again. This procedure exposes Richard to cognitive, language, and daily living skill experience through anticipation, body awareness, natural gestures to signify the clothing parts, functional grasp, vision and auditory training, reverse chaining for dressing, teacher-child social exchange, and mutual participation in an activity.

Even though the actual attainment of independent dressing is unrealistic in view of Richard's present capabilities, this activity represents a natural and multifaceted learning situation.

Before beginning dressing, Jay and his teacher engage in a little roughhousing, a warm-up session to get Jay more alert and to establish good rapport. During this bouncing game, Jay begins to show anticipation of the next bounce by raising his arms and legs towards the teacher. This gesture becomes Jay's means of indicating that he wants another bounce.

The same spirit of play is continued into the dressing sequence. All of his clothes are placed on the bed to his right. Before getting an article of clothing, the appropriate body part is rubbed and Jay is turned toward the clothing and encouraged to reach. After he puts on the piece of clothing, he gets praise from the teacher and a light reward. In this dressing session, we are working on these goals: (1) anticipation of routine; (2) memory where the clothing is; (3) gestures for communication as well as rubbing for body awareness and anticipation and associating clothing item with body part; (4) functional use of clothes; (5) vision and auditory training through fixating; (6) teacher-child rapport; and (7) dressing through reverse chaining.

In the classroom Richard and Jay work on the same skills which were emphasized in eating and dressing. The setting and the nature of the activity have changed but the goals are still the same.

Richard is being encouraged to use his grasp and bring an object to his mouth. In this case it is a vibrator with peanut butter on the end.

The second activity is to help Richard use his vision, hearing, and touch as he attempts to locate his teacher in a modified hide-and-seek game. The

use of a flashlight spotlighting the teacher's shirt is an additional clue for Richard. The purpose of the game for Richard is to have the teacher spin him around, an action he enjoys. This was not in his original behavioral repertoire but was developed by the teacher after observing Richard's head rolling. In effect, the head rolling was expanded into a more total body movement.

Jay's situation is different. He is receiving higher language training through natural gestures presented in a balloon game. Lifting up his shirt became Jay's sign for "balloon" after having to lift up his shirt repeatedly to get it after the teacher had placed the balloon under his shirt. But Jay is also working on visual tracking as he must follow the balloon in anticipation before he gets it. Moving him into different positions presents him with the opportunity to strengthen various muscle groups.

Finding the flashlight in the box enables Jay to work on memory, fine motor coordination, and language. His two-handed reach for the flashlight may eventually represent the flashlight. At present, he tries to lift his shirt to represent a universal "I want."

When working with a child, we must understand all goals and priorities because we are constantly presented with situations in which we must choose—encourage one behavior over another. Eating, dressing, and other daily living skills are certainly important but they are secondary to language and cognition. I will encourage in the child those actions that fall into the categories of language and cognition, sometimes at the expense of a daily living skill. To progress significantly, the deaf-blind child needs the cognitive and language base above all else.

The Occupational Therapist and the Deaf-Blind Child at the Basic Self-Help Skills Level

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I've been asked to cover the area of self-help skills with particular emphasis on specifics of approach and treatment. I've divided self-help into four arbitrary areas: (1) feeding; (2) dressing; (3) hygiene; and (4) toileting. Before I get into these areas, I'd like to give you some background information on our program and some of my own feelings, admittedly biased, about the treatment of the deaf-blind child at the self-help skills level.

Our program consists primarily of a team including myself as therapist, a teacher of the deaf-blind named Bernita Sims, a social worker, and 10 to 15 medical consultants from the various medical specialties. We have a parent-infant program for deaf-blind that presently includes six children, ranging from six months to four years of age. We see these children in individual and group sessions as well as during home visits. The mothers are involved weekly in a mother's group. Siegel Institute also does the medical-educational evaluations for all deaf-blind minors (under twenty-one years of age) in Illinois. The evaluation procedure is a five-day process, including all medical tests necessary as well as developmental and educational evaluations. Prior to the evaluation, Bernita and I visit the school or agency in which the child is being seen to get an idea about what the child is like. After all tests have been completed, we again visit the school or agency and offer consultation based on the evaluation results.

Now, I'd like to explain some of my general feelings about working with deaf-blind in the area of self-help.

1. First, the importance of *evaluation* cannot be overestimated. Evaluation is not an end in itself but is a natural lead into treatment. I find it extremely difficult to see how you can develop an effective educational/therapeutic program without an initial evaluation of the child. When I see a child, I want to pinpoint exactly where that child is. For example, I

want to know whether he or she is at the level of drinking from a cup with help (six- to nine-month level), or drinking from a cup unassisted (approximately one-and-one-half-year level), or somewhere in between. I want to know this, not to obtain a quotient or score, but to know what comes next.

2. I am a strong believer in the *developmental sequence* and feel that is indispensable in treating deaf-blind children. However, each child I see is very individualistic in nature. By virtue of the handicapping condition (i.e., the deafness and the blindness), these children are prone to having some quirks in their development. One specific difference is in the area of feeding. Normal children will finger feed at the age of nine months, long before they successfully spoon feed themselves. However, I frequently see deaf-blind children who can eat with a spoon beautifully but cannot finger feed. When you think about this deviation, it makes sense in terms of the tactile defensiveness so many of our children show. To insist that a child finger feed before he or she spoon feeds is wasting time and, in fact, holding up the child's development. The basic idea is that following a developmental sequence is an excellent idea but it has to be done with caution and not rigidity.
3. A third basic feeling I have concerns *consistency and time appropriateness*. As with anything you do with deaf-blind, self-help skills have to be approached with consistency. These children are deficient in two of the basic orientation senses. They need all the help they can get in ordering their environment so that basic concepts can be absorbed and skills learned. This doesn't mean that everything has to be done in exactly the same way. For those of you in institutions, for example, it's easy to fall into teaching the

child to eat only from a specific kind of tray and to have a completely frustrated and extremely upset child when the shape of the tray changes. By consistency I mean the same basic approach to a task; i.e., if a self-stimulating flicking of the spoon is not allowed by me at the lunch table, it's important that it isn't allowed by the child's mother or houseparent.

Time and task appropriateness means that you don't spend ten minutes a day in ambulation training and then carry the child to and from everywhere he or she has to go, or that you don't spend half an hour on language or signing when the child is doing self-help tasks. Language is always appropriate. The best time to learn the language of an activity is when you are actively engaged in that activity; for example, when you are dressing the child, use the signs for "off," and "on," "up," "down," "shirt," "socks," "shoes," and so forth. Normal children hear their parents and others speak for many months before they are capable of expressive language. The child who will be using signs needs this language input as much as, if not more than, the normal child. With self-help skills, such as dressing, sometimes you will have to practice outside of appropriate times; but the child will learn more rapidly if the skills are also practiced at the appropriate times; i.e., dressing in the morning, undressing at night.

4. Another basic is *persistence*, or giving the technique time to work. In our work, Bernita and I visit many schools or agencies that have only one deaf-blind child in their program. I often find a therapist who has intuitively tried very good techniques but has given up too quickly, often from a sense of not being sure he or she is doing the right thing. Our deaf-blind children are notorious for taking extremely long periods of time to achieve skills. One thing that helps is being able to break tasks down into very small steps and being able to perceive small gains. Many of the children I see have gone through many years of having such self-help tasks as feeding and dressing done for them, and they are quite comfortable with that pattern.

This brings me to another component of persistence—expecting protest. In dealing with protest, we have to know our limits (and

we all have them) as well as the limits of the child.

Another part of the picture is that we have to emphatically and genuinely show our pleasure and happiness when the child does achieve a task. Even if the child has cried throughout the whole thing and we've had to help considerably, it is still important to let him or her know that you are happy with the success. Another factor in persistence is letting the child know when a particular task is finished, when the demand you've made on him or her is over. As with the other input language I talked about earlier, this has to be done consistently and over a long period of time before you can expect the child to understand.

5. Another basic factor to consider is *motivation*, especially if you are using any behavior modification techniques. As a rule deaf-blind children are not easily motivated, and they are not often excited by the rewards usually used (e.g., M and M's and cookies). This is where you really have to know your child. Light is sometimes a good reward; I've used a little penlight that you can turn on and off quickly. I've also found that physical activity can be a reward; this can be a few jumps on the trampoline, or a few rocks in the rocking chair. Many of our deaf-blind don't particularly care for food but do like liquids, so a few sips of liquid can be used. For a quicker reward, try putting Koolaid into a household sprayer, and giving the child a quick spray every time you want to reward him. One strong bias I have is that it is always best to combine a food reward with an enthusiastic social reward. Please don't fall into the trap of giving social praise without meaning it; the child will pick it up and it will negate the whole process.

At this time, I would like to go back to my first point, that of evaluation. Self-help skills can be evaluated by use of the tests and scales standardized with normal children and the unstandardized scales of development both for deaf-blind children or for normal children. I'll briefly review some that I use.

1. *A Manual for the Assessment of a "Deaf-Blind" Multiple Handicapped Child*. This is produced by the Midwest Regional Center. It is a detailed scale devised specifically for use

with the deaf-blind. The self-help section is divided into the areas of eating, dressing and undressing, washing hands, daily living aids, and toileting. The steps are arranged in as much of a developmental sequence as possible. The sequence is a checklist that can be utilized every four to six months to compare an individual child to himself or herself. I like this scale because it gives you a good breakdown of some of the self-help skill activities. For example, the scale tracks *drinking from a cup* through the following steps:

- a. Does not drink from cup.
- b. Sips some from cup held by adult, spills some.
- c. Drinks well from cup held by adult.
- d. Helps to hold cup.
- e. Holds cup with two hands.
- f. Holds cup with one hand.
- g. Can hold cup for drinking, releases aimlessly.
- h. Can hold cup for drinking, sets down with some difficulty.
- i. Picks up and sets down cup well, without much spilling.
- j. Pours own drink with assistance.
- k. Pours own drink independently.
- l. Sucks from a plastic straw.
- m. Sucks from a paper straw, but flattens end.
- n. Sucks from a paper straw well.

2. *Portage Project Checklist*. This curriculum guide and checklist was devised for normal children from birth to five years. The self-help area is divided into year levels. The items are arranged in developmental sequence, and the point is to work toward successive items on the scale. Each item has a numbered card on the accompanying curriculum guide and suggested activities and materials for reaching each goal. Charting is done, and when the child reaches the goal, the date is recorded in the child's checklist booklet and efforts are concentrated on the next step. This checklist and curriculum guide are not specifically designed for deaf-blind and, thus, have many limitations but they can be very useful if adapted and used as a basic idea.

3. *The Callier-Azusa Scale*. This is another scale developed specifically for deaf-blind children. Its daily living skills section covers dressing and undressing, personal hygiene, feeding, and toileting. It is developmentally sequenced and

has age levels for normal development with most items.

4. *Gesell Schedules—Personal-Social Area*. These developmental schedules give exact dates of development; for example, at twenty-one months the child should be able to handle a cup well. This can give you an idea of how the deaf-blind child is doing in relationship to nonhandicapped peers and is useful in keeping you in touch with reality.
5. *The Vineland Social Maturity Scale*. This is extremely useful for the same reason as the Gesell Schedules are. It gives you a social age and by dividing the child's chronological age (CA) into his or her social age (SA) you can obtain a social quotient. I've been attempting to utilize this scale with all of the deaf-blind children I see so I can get some idea of where they are functioning as a group in relationship to normal children. So far I have gotten social quotients from below 10 to a high of 90 with most of the children falling between the thirtieth and fortieth percentiles. The Vineland also gives specific age levels for such items as "bathing self, assisted" (6.2 year level) and "bathing self, unassisted" (8.8 year level), which are not included in some of the lower level scales.

These are just a few of the many different evaluation tools available. I think that the important part is that you evaluate—no matter what scale you use. Now that I've covered evaluation in general, I'd like to zero in on a specific self-help skill—feeding—and give you more details about what I evaluate so that I can understand what kind of treatment program or correctional approach is needed.

I utilize the *Gesell* and *Vineland* tests for purposes of comparing the child to others and for obtaining performance age levels. The checklist of the Midwest Regional Center and the Portage checklist are used to compare the child with himself or herself. If the child is in the 0-3 program at Siegel, the checklists are used two or three times a year—to ascertain progress or the lack of it.

Again, getting a quotient or score is not important; utilizing your information is important. To use your information you have to look at the results and analyze them. You have to look at the holes in the development as well as the ups and downs within areas and across areas. From this analysis you can formulate your major goals.

When I look at a child for a feeding evaluation, I observe the following:

1. *Muscle tone.* I look at muscle tone in general. This can tell me a lot about a child's oral musculature. For example, if the child's muscle tone is hypotonic, which is something you often find in rubella children, then, more often than not, his or her oral muscles are also hypotonic.
2. *Oral structure.* Next I look at the tongue, lips, mouth, and teeth. Our children are very often bottle fed for a very long period of time after normal children are weaned. As a result, we may find some very well-developed sucking muscles but the masseters and other chewing muscles may be underdeveloped.
We also note things like a high arch palate, large tongue, or decayed teeth. These are physical aspects of the child's mouth, and we as therapists cannot do anything about them, but we have to be aware of their condition. For instance, decayed teeth and the accompanying pain may be one reason why the child is not chewing well.
3. *Tongue mobility.* I look at the tongue mobility especially from the point of view of chewing. The tongue has a lot to do with chewing; you have to use it to move the food around in your mouth and to form a kind of a ball in your mouth on the back of your tongue before you swallow. Try to chew without using your tongue, and you will find that the food is just spread between your teeth and your cheeks. As a result, you will have a lot of difficulty and may gag as you are trying to swallow.
4. *History.* I try to get a developmental history of eating behavior from the mother if possible. I especially need information about any problems the child had earlier in life.
5. *Position.* I look at the child's position in feeding as well as the position of the mother and/or teacher. The feet should always be firmly on the floor or a supporting surface. The chair seat should be the right size. If it's too large, the child is extended at the knee joint, and this position can promote full extension of the body. The child's hips have to be flexed and set back comfortably into the chair. The table surface has to be the correct height, and the surrounding environment should be as nondistracting as possible.

Many of our children are partially sighted and have partial hearing and can be disturbed by some of the other children and environmental noises.

6. *Utensils.* I also look at how utensils are used—not only from the point of view of what level the child is on in utensil use but also from the point of view of what type of grasp level the child is on. A recent issue of the *American Journal of Occupational Therapy* includes an excellent article on prehension patterns. The author of the article points out that we are often guilty of expecting a child to have skills that are beyond the child's level of functioning. Sometimes, when you have a failure with spoon feeding, if you go back and evaluate the prehension patterns, you will find that the child's grasp was not mature enough for the task.
7. *Interfering behavior.* We also look at self-stimulation behaviors that interfere with feeding. Our deaf-blind children have a lot of these. Among the most common are regurgitation, twiddling with utensils, and storing food in their mouths like chipmunks. We also consider how long it takes them to eat. Sometimes they eat too fast. Most often they eat too slowly, spending a lot of time in self-stimulation behavior.
8. *Likes/dislikes.* I ask about what the child normally eats and about his or her likes and dislikes. I try to analyze these foods with regard to taste, temperature, and texture. The tactile defensiveness I often see in the young children has a way of showing itself in eating habits especially in respect to preferred food texture. Deaf-blind children have a tendency to reject new things, and if the child has been on a limited diet of applesauce and oatmeal, getting him or her to accept new foods will be difficult.

I would like to go into the areas of self-help skills and give you some specifics; however, please keep in mind that we always have exceptions.

Feeding. One of the first steps in feeding is getting the deaf-blind child to hold his or her own bottle. In doing this, we use a hand-over-hand technique, our hand firmly over the child's. I try to gradually fade the hand-over-hand guidance; you can fade from the hand slowly to the wrist and then to the elbow, ending with a light touch at the elbow. You must know your child and know when

to fade assistance because our children get into the habit of requiring assistance. I try to be very sensitive regarding when I can fade my assistance with the child.

One general rule in feeding is to be behind the child for more normal hand and arm motion. However, some of our children have extension patterns and throw their heads back; some will also try to look at you behind them.

One thing that you notice often when using the hand-over-hand method is that the child will try to pull away. I try to work through the procedure despite the child's protests. Bernita and I frequently have to hold children in a kind of octopus fashion, but this is easier to do with a two year old than with a ten year old. You have to recognize and work on the basic problem, and the basic problem in the child's pulling away is usually tactile defensiveness. I want to do more than just control the child by holding, which is what we are doing with our arms and legs all over him or her in an octopus fashion. I want to be able to break through the defensiveness. I do a lot of work with our children without their shirts, socks, or shoes on so they can feel their bodies. You can roll them up in textured material or use baby lotion, powder, terry cloth, and water.

Even at the basic self-help level many children have trouble or need improvement in sucking, swallowing, or causing mouth closure to prevent drooling. One technique for correcting this problem involves the use of a piece of cheesecloth. You dip the cloth in honey, chocolate, or some liquid the child likes and hold it in his or her mouth—having the child suck the liquid out of the cloth. The lips and the area around the lips can be brushed. They can also be iced, or you can use a cold cloth. Basically, I have a little bit of a problem with icing with our deaf-blind children. I've seen some terrified reactions. So, if you are using ice, be cautious and try to take into consideration the child's reactions. Some of our children like it and others don't. A good technique for teaching the child to swallow is icing the sternal notch. Keep in mind that if you ever give a teacher or parent any kind of brushing or icing instructions, you have to be very specific in those instructions. That is one of the reasons why I shy away from using them too much in an outpatient program.

The environment or the activity can be structured in many ways to achieve what you have set up as a goal. One way is to save a favorite food,

like applesauce, and only give the child this favorite food when he or she is spoon feeding, if this is your goal. If you want a child to be particularly thirsty for cup training, give him or her saltines or pretzels before you begin cup training.

Many of our children are extremely strong-willed, and at times you will come across a child with good grasp and good hand-to-mouth patterns. The child can actually hold the spoon but will have trouble feeding himself or herself because of the many years of having it done for him or her. The child may refuse to feed himself or herself. You have to check with the pediatrician and get the cooperation of the parents, but the general rule is that a child can survive 24 hours without food without severe problems. As a therapist I may be hesitant to use this technique, but I have had mothers who have used it at home with good results.

The child should know where the food is coming from—that it's not just coming from out of the air. Have the baby feel the bottle, dishes, or tray; have him or her in the kitchen so that he or she can smell the food.

Tongue movement is important for chewing as well as for speech. To facilitate tongue movement, you can put peanut butter or thick chocolate sauce inside the mouth on the side and have the child lick it off. You can use a camel hair brush and quickly swipe inside the mouth; the tongue will automatically go to the spot you touched. If you have a child who is a tongue protruder, a touch of ice will automatically bring the tongue back in. If you have the opposite and want the tongue to come out with increased mobility, you can take peanut butter or something similar and put it on the outside of the mouth.

Chewing is usually a problem with deaf-blind children. Sometimes the child has an overactive gag reflex. Use a tongue depressor or one of the rubber-tip spoons and "walk" it back on the tongue. You also want to desensitize the mouth. To do this, you can use a secretary's rubber finger tip. They are good for rubbing the inside of the mouth. If the child will not allow you to brush his or her teeth, you can give him or her some gum circulation by rubbing his or her gums and teeth with the secretary's rubber finger tip. A blender is a great thing to use to increase gradually the texture of foods. Basically, there are (1) baby foods that are strained; (2) junior foods that are like a cream with lumps, such as cottage cheese,

scrambled eggs, and mashed vegetables; (3) grainy foods, such as hot dogs and chopped vegetables; and (4) regular table foods. Going through these texture stages is often a long process with our children.

Dressing. In most of the dressing skills, we do reverse or backwards chaining. In this, we simply have the child do the last part of the task first. We want to teach the child that clothes don't come out of the air. As we put his or her clothes on, we have a child touch the part of the body the item goes on. You can use the dressing and undressing activities to teach body awareness. Language development can be enhanced as you give the child the sign for the article of clothing and tell him or her whether it is going on or coming off.

Clothing fasteners are avoided by a lot of people who work with deaf-blind children. I don't think they should be avoided. I think they should be dealt with when the child is developmentally ready. You can adapt zippers with large safety pins to make it easier to pull the zipper up and down. You can put loops in the back of the clothing articles to help identify front from back. Loops sewn in the toes of socks help identify toes from heels—something that can be hard to identify tactilely.

Hearing aids and glasses are also included in the dressing activity. We have many young children who have just received hearing aids or glasses. You don't very often see a child who readily accepts these devices. If the child doesn't wear glasses or ear molds and you put them on for the first time, the child may reject them. They are not painful but they are uncomfortable. To the child the aid is something that shouldn't be there, and he or she will want to take it off. One of the saddest things for me is to go through the records of some of the older children and find that Johnny had hearing aids when he was two, but he didn't like them, so he never used them. Maybe he had a loss that could have been helped, but wasn't because the parents or therapists didn't insist. I don't think we should expect our deaf-blind children to *like* these devices and be able to utilize them correctly right off the bat.

Hygiene. Hygiene covers the areas of washing, brushing teeth, and so forth. To encourage washing hands or face, you can provide steps so the child can reach the sink. You can use hot and cold faucet identification—hot can be a smooth texture on the faucet and cold can be a rough texture.

Dental care is neglected in many of our children. We have seen so many of the older children with serious dental problems that we try to emphasize the importance of dental care in our younger children. We must be fairly cautious about how many sweets we are giving the child. If you use such behavior modification rewards as M and M's, you might try to switch to something else; some of our rubella children like salty things better than sweets so you might try pieces of pretzels. The most usual difficulty in providing dental care involves getting the children to open their mouths. We use tongue depressors, which can be taped together with masking tape to fit the child's mouth. First, you get the child to cry or in some way to open his or her mouth; then you can put the tongue depressor on one side while you brush the opposite side. Keep in mind that brushing with assistance comes in at three to four years and brushing unaided comes at four to five; don't try to push your deaf-blind child too fast along these stages, but you can and should brush for them at a much earlier age. Again, positioning is easiest in back of the child. One problem you may have is getting the toothbrush in the correct position for brushing the back and upper teeth. Our dentist showed us how to take a baby toothbrush and by holding it under hot water to shape it to fit the adult hand. You can also use a heat gun to shape a toothbrush, but the hot water will work just as well.

Toileting. Normal toilet training is a very gradual process. It begins at about fifteen months when the child first gives an indication of being ready and goes to three-and-one-half- to four-years of age before he or she is completely dry at night. Keep in mind that completing the training is not going to be a matter of months—but years. This is where the reality of normal development is important. People frequently say, "We tried toilet training last semester, but it didn't work." The point is that it will take much longer than a semester.

One technique used often in normal toilet training is to have the mother keep a schedule of when the child defecates or urinates and have the mother utilize this schedule in the training. Also, the child should have an identifiable, definite place for this function. Usually, the bathroom is the most natural environment. The child can feel the tile and the basin; he or she can smell the toothpaste and the soap; and if the child has any residual hearing, he or she can often hear the toilet flushing. Even if the child is completely deaf-blind,

he or she can still identify the toilet as a place to go. When the child wets during the day, take him or her to the bathroom for changing; don't change him or her in the kitchen or the classroom. Do this so that the child starts developing an association between that function and the bathroom. You have to make sure the potty chair is close to the floor so that his or her feet are stable. It is very scary for a deaf-blind child to be up in the air with his or her feet dangling. Concerning the flushing of the toilet, some of the children love it and others are scared by it.

Make sure you do not allow the child to remain on the toilet for more than 5 to 10 minutes. It can be totally counterproductive to place a deaf-blind child on the toilet and leave him or her alone. When you leave the child on the potty for 15 minutes or half an hour, he or she can be very happy sitting there engaging in self-stimulation. As a result, what you are doing is the opposite of what you want; you are teaching the child that if he or she goes you are going to take him or her off and stop the self-stimulating behaviors. Therefore, you are teaching him or her not to go. You have to be very careful in what you are teaching the child.

Such procedures as pouring warm water over the genital area or giving juice are very helpful for the first successful experience; but these can be over-used, and you can teach a child to be dependent on these techniques.

Azrin-Foxx is the behavior modification technique with which I am most familiar. It was devised in a state hospital in Illinois for severely retarded, and I have seen it used in Illinois with many older, more severely involved children. With this technique, the child wears a disposable diaper with moisture snaps so when he or she wets an alarm goes off and lets you know right away. The toilet itself also has moisture detecting snaps. This technique permits you to reward or give a negative response immediately. You can also increase the number of urinations by giving the child lots of liquids.

One problem our deaf-blind children sometimes have is constipation. We have found some good results with abdominal strengthening exercises; for example, having the child lie over the big exercise ball on his or her back and encouraging him or her to lift his or her trunk up.

Recreation for Deaf-Blind Children

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Recreation is generally defined as refreshment in body or mind, through some form of play, amusement, or relaxation. To most of us, recreation simply means the pursuit of fun or satisfying conditions. Gene A. Hays said in the paper he presented at the Southeast Regional Workshop for Teachers of Deaf-Blind, Ellisville, Mississippi, 1974:

Every child deserves and, perhaps, requires the opportunity to experience excitement and imagined dangers in the pursuance of fun. It is never an earth-shaking event when a child skins his knee, or bruises a shin, in his quest for adventure. Skinned knees and bruised shins are no more than unfortunate and soon forgotten by-products of some of the most enriching and memorable events of childhood. Basic to this philosophy is the fact that physical education and recreation is more than preparation for participation in lifetime activities. The fun of activity, per se, can be an end in itself. Admittedly, fun is not a popular objective for recreation specialists and physical educators to propound for the scrutiny of the academic world. However, no matter how theoretical and scientific a discipline may someday evolve, fun and enjoyment are the factors which will continue to convey to all the value of activity.

The Need for Individualization

Though most of us agree with Dr. Hays, we often fail to adhere to those basic beliefs when designing recreation programs for deaf-blind children. Everyone has heard the old cliché, "You can lead a horse to water but you can't make him drink." Perhaps this statement should be revised to say, "You can lead a deaf-blind child to recreation but you can't make him have fun." Numerous deaf-blind programs involve fitting deaf-blind children into recreation programs rather than attempting to design recreation programs to meet the needs of the individual child. Some recreation specialists and teachers coerce and cajole groups of children to participate in all sorts of so-called recreation activities in the name of fun. However, some

children may not perceive the activities as being recreational or fun. An example would be the child who screams at being urged to swim, master an obstacle course, or touch a strange animal at the petting zoo.

Like any other learning situation, recreation can best be approached by breaking down the specific task into its sequential developmental steps and then mastering one step at a time. A recreational program designed for the deaf-blind child must utilize trial-and-error methods. The program must be designed to fit the child's needs rather than attempting to fit him or her to the program. The professional must remember that it will often be necessary to discard some program components and modify others. A considerable amount of work with many more deaf-blind children will be required before professionals will be experienced enough to detect patterns of behavior and responses that will enable them to design individualized programs. Hayes (1974) summed it up by saying:

Every child is different. The recreation specialist must therefore provide opportunities for each pupil to learn in his own unique way, in his own rhythm, and at his own rate of speed. In a good teaching-learning situation every child may be working on an entirely different task selected to meet his particular needs and programmed for success. Hence, all children within a single class should not be expected to work on the same motor tasks or identical problems in socialization or communication.

Thus far, I have discussed the need for individualized recreation programs. I think it is appropriate at this time to focus attention on some program models that have made provisions for the unique needs of the individual deaf-blind child. The first model to be presented is an outdoor education and camping program.

Outdoor Education/Camping for the Deaf-Blind

The outdoor education and camping program was initiated in an effort to provide each deaf-blind

child of the Southeast Region with a recreational program designed to meet individual and unique needs.

The first question to be asked is, "Is a program of camping and outdoor education beneficial for all people?" The second question is, "Do you consider an individual who is deaf-blind an individual first and deaf-blind second?" If your answer to both questions is yes, then a program of outdoor education/camping is beneficial for an individual who is deaf-blind (Cotten, 1974).

Such a program was instituted during the summers of 1973 and 1974 in Mississippi for deaf-blind children of the southeastern states (Mississippi, Alabama, Florida, Georgia, Tennessee, and Kentucky). Funds for this program were provided through the Southeast Regional Deaf-Blind Program. W. W. Elliott is Project Director.

Goals of the Program

The Southeast Regional Center's summer program was designed to provide a short-term intensive exposure to a variety of experiences and to enhance the educational and developmental progress of the deaf-blind in the Southeast. The primary goal of the intensive summer training program was to facilitate the maximum potential of the individual deaf-blind children served by the Southeast Region. A second goal was to identify the needs, strengths, and levels of functioning of each child served. A third goal was to provide an opportunity for prospective teachers and other trainees to observe, study, understand, and work successfully with children who have learning problems. The intensive training, assessment of individual abilities, and the exposure of novices to the needs of deaf-blind children produced a mutually beneficial learning experience for both the staff and children participating in the program. A fourth goal was to attempt to prevent loss of skills gained in school. A fifth goal was to provide parents with a respite service.

Strategies

The summer program was divided into five sessions. This project had proposed to serve 120 deaf-blind children in groups of 24 for each of the five sessions. Each of the two-week sessions included four children from Mississippi and 20 children from one of the following states: Alabama, Florida, Georgia, Kentucky, and Tennessee. This enabled the children to have a variety of

contacts with other deaf-blind children. Each state's director of the deaf-blind program was involved in establishing the schedule for children from his or her state. The admission requirements for the two-week training program were as follows:

1. The deaf-blind participant must have been on the Southeast Regional Office Registry and eligible for deaf-blind services.
2. Participants must have been under the age of twenty-one.
3. Participants must have been at least semi-ambulatory.

The staff was as follows:

- | | |
|--|----|
| • Training coordinator | 1 |
| • Speech and language therapist | 1 |
| • Arts and crafts instructor | 1 |
| • Registered nurse | 1 |
| • Cook supervisor | 1 |
| • Counselors | 16 |
| • Secretary | 1 |
| • Consultant physician on 24-hour call | |
| • Emergency hospital service furnished by local hospital if needed | |

The staff included professionals in the field of special education with experience in camping for handicapped children. The counselors were college and university students, some of whom were specializing in education for handicapped children; some wanted a job with experience to be gained. The counselors were assigned on a one counselor to one camper ratio. The counselors were responsible for the camper on a 24-hour basis. A counselor could request another counselor or staff person to relieve him or her as necessary. University students who were there for practicum experiences were also available to assist the counselors.

As stated previously, one goal of the program was to provide an opportunity for deaf-blind children to experience "normal" daily activities. The following program comprised the training curriculum for "normal" daily activities for each two-week training session:

1. Communication:
 - a. One hand manual alphabet and signs
 - b. Speech and language development
 - c. Auditory training

A total communications approach was utilized. The communication program was assigned to the language and speech instructor who was assisted by the counselors. Special

emphasis was placed upon learning signs pertaining to recreational activities.

2. **Socialization:** Field trips, picnics, campfires, swimming, arts and crafts, musical experiences, dancing, shopping, petting zoos, nature trails, low organization games, fishing, boat tour of New Orleans, week-end camping in state park. The socialization program was assigned to the counselors under the supervision of the training coordinator.
3. **Daily Living Skills:**
 - a. Toilet training
 - b. Dressing
 - c. Feeding
 - d. Grooming

The daily living skills program was assigned to the counselors under the supervision of the training coordinator and nurse.

4. **Motor Development:**
 - a. Corrective therapy
 - b. Gross motor development
 - c. Fine motor development
 - d. Orientation and mobility
 - e. Play activities used to develop perceptual motor skills

The motor development program was assigned to the counselors under the supervision of the training coordinator.

5. **Sensory training:**
 - a. Utilization of residual hearing and vision
 - b. Tactualization training
 - c. Olfactory stimulation

The sensory training program was under the supervision of the training coordinator with assistance from all the project staff.

In conjunction with the Southeast Regional Center, the Mississippi Deaf-Blind Program has hosted the Southeast Regional Center's summer program for the last two years at the Preventorium Complex in Sanitorium, Mississippi. The Southeast Regional Center's summer program has successfully served more than 200 deaf-blind children and their parents in the past two summers.

Home-Based and Community Recreation

Programs for deaf-blind children have placed considerable emphasis on home training in recent years. The purpose of a home trainer is to teach parents to be more effective teachers of their children. Professionals are beginning to recognize that parents are the major educators of children,

and that children can learn best in their natural environment. In addition, parents are beginning to demand involvement and participation in the education of their children. This growing concern for parent involvement has caused numerous programs that serve deaf-blind children to employ home trainers.

The state of Mississippi is primarily rural, which is why the Mississippi Deaf-Blind Program has chosen to adapt elements of the Portage home approach to the early education of handicapped children in a rural area. The Portage Project (Portage, Wisconsin) is directed by David Shearer and is a model project for training preschool handicapped children in the home. The Mississippi program, operating out of Ellisville State School, has been permitted to change certain procedures which are common to other Portage models. The changes came about because we were the first program model to operate out of an institution. Ellisville State School got involved in an effort to reach out and serve those children who are not in programs and to discourage institutionalization by keeping them in their homes with their parents as teachers.

Currently, the Mississippi model serves 30 children throughout the state. These children are severely retarded and range in age between eighteen months and sixteen years. Three home trainers serve these children, and 20 of the 30 children are in the deaf-blind program.

The Mississippi model differs from other models in that we see children of all ages who are functioning on a preschool level and all our children are evaluated by various departments at Ellisville State School. Some of the children are residents at the state school; others are enrolled in various educational programs in their own home towns. In this latter instance, the home trainer works not only with parents but also with the teachers, dormitory workers, foster grandparents, and other related personnel. This is an effort to get all individuals who work with the child on the same track and aim for the same goals. For the working parent, the home trainer may visit with him or her on a coffee break without the child being present. At that time, the home trainer leaves prescriptions for the next week and talks to the parent about how the child did last week. After seeing the parent, the home trainer then visits the child to see how well he or she is progressing.

Because of travel expenses, some of the children in remote areas of our state are only seen once every two weeks.

We believe our program has been a success because of extremely effective family involvement and the fact that we can consider all our parents as real educators of their children. Equally as important as good family participation is the usable format of the Portage Project. Although the format is not designed for the deaf-blind, it gives us a starting point and offers suggested activities for each child in the areas of cognition, communication, socialization, movement, and self-help. The most important contributing factor involves behavioral objectives that can be broken down into small enough steps for the parent, child, and teacher to see weekly successes. Because of the breakdown in activities, the pressure of expecting too much too soon of parent and child is reduced. We are very proud that we have had 80 percent success on all prescriptions since our program started last January. Another factor contributing to the success of our model is that we have been able to have parent meetings in areas where six or more of our parents live.

The home trainer could easily overlook the possible advantages of including recreational objectives in the home-based program. To overlook the tremendous recreational potential that exists through utilization of resources that are available in the home and community would be tragic. The home trainer should offer guidance for parents in locating, scheduling, and utilizing community resources.

Valuable learning situations can be created by allowing the deaf-blind child to participate in play activities with other siblings. The deaf-blind child is truly fortunate if he or she has brothers and sisters to imitate, to share with, to love, and to play and fight with. Lillian Helgason (1974) presented a paper entitled "A Parent's Perspective on Recreation for Deaf-Blind" at the National Institute on Recreation for the Deaf-Blind, University of Iowa, Iowa City, Iowa. Mrs. Helgason referred to the fact that their deaf-blind child was included in every

family function, no matter what allowances had to be made. She further explained:

We as a family feel our deaf-blind multihandicapped member has enjoyed and felt rewarded from everything we could manage from fun weekends on the lake, family trips, picnics, family reunions, taking part in Christmas festivities, Easter, Thanksgiving, family weddings—to sharing a bedroom with her sister.

The advantages of the Portage Home Intervention Model are:

1. Involving the parents, for who should best be able to educate their handicapped child but the child's parents? Who has this responsibility for a relatively much longer period of time than parents of normal children? By training the parents, who already are natural reinforcing agents, one will provide them with the skills necessary to deal with new behaviors when they occur.
2. Learning is occurring in the parent and child's natural environment; therefore, the problem of transferring to the home what has been learned in a classroom or clinic does not occur.
3. The maintenance of desired behavior will likely be enhanced if the behavior has been learned in the natural environment.
4. Since all teaching is done on a one-to-one basis, individual programming of curriculum and reinforcers for each child is much easier to put into practice. With each child serving as his or her own control, he or she can progress at his or her own rate. This allows the teacher to provide individualized instruction and frees him or her from the dangers of curriculum implementation in accordance with group expectancies.
5. Transportation does not present problems. One does not have to assume responsibility for the children, sometimes very small children, while transporting them to a central location. This is especially true in rural areas where great distances must be covered, when the children are scattered over a large geographical area, and indeed when they are preschool and/or multihandicapped.

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Daily Living and Leisure Skills Leading into Academic or Prevocational Skills

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We have been discussing different functioning levels of deaf-blind children at this workshop, beginning with nonambulatory children and proceeding to children who are learning basic self-help skills and sensorimotor tasks. We have now come to the next level: use of the skills of daily living to achieve success in preacademic, academic, and prevocational areas. My purpose will be to introduce you to these children and to ask you (1) Where did the child begin? and (2) Where do we want him or her to go?

In the Beginning . . .

Our program at Children's Convalescent Center utilizes functional definitions of these three areas we've been discussing to determine when the child is ready to move on to the next higher skill level. We do not follow or consider age levels; only performance counts. In this third level, which could be called "preacademics" or "pre-prevoc" (we've used the title Extended Service Program), are certain skills which must be mastered to achieve in that program. I will share these with you to give you a good idea of where these children are functioning.

1. *A basic system of communication* that is used both receptively and expressively by the child to communicate basic thoughts, feelings, and needs is necessary. This communication is not a conditioned response, like presenting the child with a plate of food and the child signing "eat," or having the child point to one of three familiar objects on the table when you say, "show me the ball." The child's saying "I want to eat" or "let's play ball" captures the idea. This language must be past the gesture stage and must be spontaneous and used to convey the most desperate need. It must also be useful and rewarding for the child.

2. *Basic daily living skills* must also be demonstrated by the prospective student. He or she should be able to undress, dress, bathe, and so

forth. The child is probably going to need help in refining difficult movements, such as brushing his or her teeth and combing the back of his or her hair, and may not yet be exposed to more advanced grooming skills as nail care or shaving. He or she has probably not been exposed to house-keeping or cooking. We also like the child to be able to feed himself or herself table food and be eating some finger foods. Most of their acquired skills would involve undressing, dressing, personal hygiene, and eating. Here, refinement of learned skills and exposure to more advanced skills is the key.

3. *Gross and fine motor skills* which enable the child to walk and do gross motor play activities as well as enough fine motor control to manipulate simple materials and to use manual language are desired.

The three abilities we look for involve communication, daily living skills, and gross and fine motor skills.

At the End . . .

Now that we know where we started, we need to determine where we want the child to go. Lots of goals, objectives, and planning are involved, of course, but let's examine the ultimate one—helping the deaf-blind individual to live up to his or her potential. Some of the alternatives are: (1) independent living; (2) semi-independent living; (3) living at home with family; and (4) institutional living. Of course, we would like to see all of the children we work with living independently, but that's not realistic; I feel that most of the time semi-independence is realistic. Now we need to determine what skills, attitudes, and abilities are necessary to achieve our goal of maximum independence in living, plus holding a job, or going to school.

Let's think in terms of what skills and attitudes we employ every day, mostly at an unconscious level, that enable us to function as we do. We get

up at a time which affords us to do what needs to be done before leaving; personal hygiene is done; we choose clothing appropriate to the situation and weather and then color coordinate them; we cook breakfast, which involves pouring, measuring, cooking, using appliances, and so forth. We make arrangements for transportation and get to work on time and either check in or punch in; we may have coffee and chat with co-workers until time to start; we work with flexibility and tolerance for situations beyond our control, such as temperature, noise level, and the fact that no one does his or her work as well as we do; at break time we proceed to the designated area and carry on appropriate social conversations; the work day goes on like this until time to quit. We then go home; may do some shopping on the way; do the daily housekeeping; cook dinner and clean up; relax with leisure activities at home or out; and keep in touch with the world through television, radio, or newspapers. Then, of course, we retire at an hour which will allow us to function adequately the next day.

In case you have never noticed, this is a job in itself! We can all attest to that. There must be thousands of skills, abilities, and attitudes employed in "just living."

We, who are working with disabled persons, should also bear in mind that the standards used to judge the behavior, performance, and social abilities of the disabled are not the same as the standards applied to us. The handicapped person must not only overcome his or her particular disability and function adequately but must also be a "super human" or a "super personality" to cope and get along with the general public. The skills we use every day must be even more finely developed by the multihandicapped. Haven't we all, even us, at some time or another shown this unconscious prejudice? I know I have—maybe the first time was when I realized that the blind rehabilitation counselor buys and coordinates her own clothes or that deaf people are probably the world's safest drivers.

The curriculum here is life itself. I like to break it down into four comprehensive areas and teach from that.

1. *Personal and social development* involves grooming, nutrition, care of special appliances, understanding and dealing with maturation and physiological changes, and handling feelings. It also encompasses feeling self-worth through self-reliance and confidence gained through independence. It includes feeling like you belong and

getting along with others, your family, and your community.

2. *Language and communication skills* include methods (American Sign Language, Braille, and so forth) of receiving and expressing one's thoughts, feelings, and needs. Development of prelinguistic and linguistic skills not only enables one to communicate but also affords some "side order" skills such as following directions, sequencing, thinking conceptually, remembering, and others.

3. *Sense training* is the use of residual senses through practical application. Not only have I been guilty of auditory training using clackers and whizzers and drums, but I even have it preserved for posterity on video tape! I'm talking about the ability to determine whether appliances are left on, or whether the glass is full of liquid, or the ability to recognize danger by sounds, sight, or smell.

4. *Safety* involves mobility, both indoors and outdoors, and safe practices in the home. One must also know about accidents and some basic first aid.

Something Was Missing . . .

I'm going to use Oklahoma as an example to illustrate the next point. Our program was created because a need was perceived. There was a gap in services to the deaf-blind which we felt needed filling. Oklahoma had a workable state plan involving several agencies, each of which was to fulfill a certain section of the continuum for nonambulatory to prevocational training. There was no gap in teaching sucking, walking, first-grade paper work, or stuffing envelopes, but there was a gap in providing for the DIGNITY AND QUALITY OF FUTURE LIFE. I don't mean to imply that children were being neglected or mistreated, but no systematic curriculum had yet been developed to provide for these needs. I'd like to quote from the goals we set for the program and for ourselves: "With deficiencies in these skill areas, we are predisposing the deaf-blind individual to failure in a vocational setting, no matter how well he or she can assemble widgets." A widget, by the way, is any manufactured, unassembled "dealy" or "thingy" that is assembled in a factory and provides a job which the deaf-blind person could perform. But let's examine that statement again. "With deficiencies in these skill areas, we are PREDISPOSING TO FAILURE . . ." In other words, if you cannot do things for yourself, if you feel you don't belong or that you're not important or capable, if you can't function socially, no matter how well you

perform at any hour job or in school work, you will fail.

All this must sound fairly sensible, but it would be helpful to put the philosophy into practical terms. I want to share some actual examples of "so whats." "So what" if the deaf-blind child can pick his or her name out of a list of other four-letter words, not written in blue ink and with no common letters, if he or she can't follow a related two-stage command? "So what" if you have trained a client to assemble an 84-piece widget in

two minutes, if in ten seconds he or she can't find his or her way to the employee's restroom? "So what" if the academic-bound student can do high school level history if he or she doesn't know what goes into a salad and hasn't any idea of how to prepare it?

Therefore, what we've been discussing are skills that enhance the individual's worth and self-esteem through independence in day-to-day living. We want to aid the individual to approach life in a positive and realistic manner, regardless of the milieu in which he or she lives.

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Recreation Via Motor Education

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Before examining the relationship between motor development and recreation, a review of the importance of motor development is essential. Charles Buell wrote: Shall they be handicapped with feebleness, awkwardness, and helplessness in addition to blindness? The surroundings of the blind do not favor the development of activity, self-reliance, and independence. Parents and friends find it easier to attend to the wants and requirements of their blind children than to teach them to be self-helpful in the common acts of everyday life. . . . As a rule the vitality of the blind is much below the average vitality of seeing persons, and any system of education which does not try to overcome that defect will be a failure. It is the lack of energy and determination, not the want of sight which causes so many failures among the blind. Even if blind persons become accomplished scholars, good musicians, and skilled mechanics, who will employ them if they are timid, awkward, and helpless? They must have faith in their own capacities and be able to inspire confidence in others. . . . Without confidence, courage, and determination to go about freely in the world, there is no chance of success for a blind person, and that confidence and courage are given by the playground and gymnasium.

Although Buell was referring to the blind, the words are applicable to the deaf-blind, multihandicapped population as well. Indeed, motor development is essential to the entire development of the deaf-blind child.

The deaf-blind child is "incapsulated in his or her own body" (Guldager, 1970). He or she is trapped within himself or herself, oblivious to the world around him or her. People and objects exist only for one purpose: self-stimulatory activities. A motor development program helps the child discover himself or herself, and once he or she realizes he or she has two arms and legs and two hands that can hold, turn, twist, and throw, he or she begins

to discover the environment. Then, in turn, as the child explores the environment he or she learns more about himself or herself. By moving through an obstacle course the child finds that he or she can crawl under a table, or walk around a hula hoop, or crawl through the barrel, or climb on and over the horse. He or she discovers how he or she can move, the size of his or her body, and that he or she cannot hide in a shoe box.

Theories of perceptual motor development, such as "The Theory of Cortical Integration," by Domin and Delcato and "The Dynamic Theory" by Oliver, have brought to light the interrelationship between motor and cognitive development. Jones (1967) declares that the foundation for academic learning is the development of a body concept; and van Dijk (1968), the father of coactive movement, believes the body is the basis for communication. "An American psychologist says that our basic concepts are built upon motor patterns not on tactile sensations, form, or shape. A *thing* for a little child is what he can do with it" (van Dijk, 1968).

In the "Central Cognitive Theory," Cratty states, "Movement activities which provoke thought may improve intelligence" (Cratty, 1967). All of the activities included in a motor skills or recreation program for deaf-blind children should be designed to do just that: provoke thought! Multihandicapped children need help in associating a particular movement with a goal. They need to be shown a purpose for moving.

Many motor activities require perceptual skills, and a concerted effort should be made to combine motor with perceptual tasks whenever possible. For example, the children can learn to alternate feet when made to step over the rungs of a ladder and match the colored tape on their shoes with the colored construction paper placed in the spaces of the ladder. Drawings of the objects in an obstacle course may be constructed and are quite useful.

Six-point figure illustrations can be invaluable during a tumbling unit. It is imperative that the instructor employs visual aids designed in accordance with each child's needs. The thought processes involved in interpreting the movement depicted by a stick figure are basic to the intellectual processes involved in reading. Apparently a motor skills recreation curriculum offers activities that are vital to the deaf-blind child's cognitive development.

The inherent value of motor activity within itself is often overlooked despite its importance. The deaf-blind child must be taught many basic motoric skills which "normal" children seem to acquire naturally. Do you remember learning to jump or run? For some deaf-blind children, to jump down from a chair is a monumental feat. Overwhelming fear masks the joy inherent in movement for many multihandicapped children. Balance is dependent upon muscular sense, the inner ear mechanism, and visual orientation. Dancers and gymnasts have long used a technique called "spotting" to prevent dizziness by maintaining visual orientation. Obviously, children with both visual and auditory problems also have balance problems. The muscular strength and flexibility, cardiovascular endurance, general coordination, and fitness of most deaf-blind children are also below par. Many educational programs for the multihandicapped do not have a full-time motor skills specialist. The classroom teacher, aides, and houseparents must see that these children engage in activities to improve their basic motor abilities which will affect every aspect of their life-style.

The underlying objective of a motor skills program should be to have fun. Motor development is a springboard for recreation. It is the development of a foundation for participation in constructive leisure time activities.

What Is Recreation?

Recreation has been defined as "Activities or experiences carried on within leisure, usually chosen voluntarily by the participant, either because of the satisfaction or pleasure he gains from them or because he perceives certain personal or social values to be derived from them. Like leisure, recreation does not have work connotations" (Kraus, 1973).

If recreation is to complement the total education program, it must be defined more specifically

in relation to the multihandicapped child's orientation. Hence, any activity chosen voluntarily in which the student is interacting with another individual and/or his or her environment in a meaningful way should be viewed as recreational. Purposeful movement or motor skills are types of constructive recreation. Self-stimulatory activities such as eye poking, flicking, rocking, masturbating, or perseverating on lights, strings, or other objects should not be considered purposeful recreational activities. Such a definition ensures that the activity is "socially acceptable." Educators are expected to normalize children. Behaviors that fall outside of a certain range are generally not accepted. Gifted children, as well as the handicapped, may exhibit what society labels deviant behaviors. Without delving into all the philosophical implications of imposing behavioral standards upon certain populations, it will suffice to say that because the present educational practice is to discourage self-stimulatory activities, this type of activity should not be considered recreational.

Problems of the Deaf-Blind

Reexamine the deaf-blind child. Cut off from the outside world by his or her sensory deprivations, the child is withdrawn. Reality is within. The world as "normal" children perceive it is non-existent to the deaf-blind child. Initially, he or she has no options but to sit and rock or flick because recreation is a nebulous concept.

Our responsibility is to teach such children how to play, a task that begins by helping the child discover himself or herself and his or her environment. Because of a fear of the unknown, at first the deaf-blind child may not enjoy all the activities included in a structured motor development or recreation program. The deaf-blind child may find new experiences which involve a change in routine to be quite terrifying. Once this initial fear subsides, however, and as the child's skill increases, some of the activities taught during organized periods will become his or her favorites and he or she will want to engage in them during free time. This is when motor skills become recreation skills.

This metamorphosis does not occur overnight, however, for many obstacles must be surpassed. Motivation, or rather the lack of it, is a tremendous problem. Often times, the multihandicapped child will just not be interested in an activity. Many games require considerable understanding of language concepts. What does "won" or "lost" mean

to the deaf-blind child? Cooperation and competition are complex social interactions difficult for severely handicapped children to understand. The educator's task is to find or invent constructive recreational activities that are appropriate for each child's stage in development and which will be interesting for him or her. For some children, to *win* must mean a *cookie*; for others, a *big hug* will suffice. Ultimately, the won-lost concept will be understood and the activity itself will become motivating.

The "Nitty Gritty"

Several developmental stages in a child's play may be identified. Avedon (1974) has delineated the following phases of activity. Examples of activities for deaf-blind and other multi-handicapped children are given at each level.

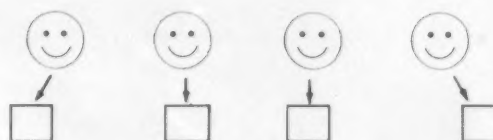
Stage I. *Intra-Individual Action* requires no contact with the outside world. It is the type of activity that takes place within the mind of a person or action involving the mind and part of the body. Deaf-blind children engage in many socially unacceptable intra-individual activities such as flicking, rocking, eye-poking, and masturbating. Indeed, it appears as if many multi-handicapped children are stuck at this level of activity. Not all intra-individual action should be categorized as unacceptable, however. Purposeful movement such as tumbling skills or basic locomotors are examples of intra-individual activities and are constructive recreational activities as well. Intra-individual action may be depicted in the following manner.



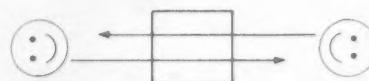
Stage II. *Extra Individual Action*. This type of isolated play involves only inanimate objects in the child's environment. There is no contact with other children or adults; the action reflects what the child sees in his or her environment. Extra individual activities which may be of special interest to the deaf-blind child are: play with balls, stuffed animals, dolls, clay, balloons, soap bubbles, pin wheels, musical instruments, Lincoln logs, and a "light bright." On the playground the sandbox, swing, or horizontal bars may be inviting.



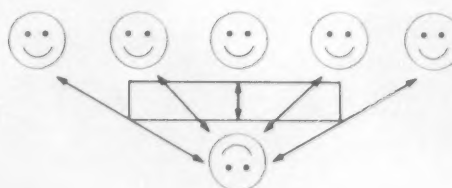
Stage III. *Aggregate Action* is frequently referred to as parallel play. It is any action directed by a person toward an object in the environment while in the presence of other persons engaged in similar activities. The child may be aware of others present but he or she does not acknowledge them. This is often the situation when multihandicapped children roller skate, swim, or bowl.



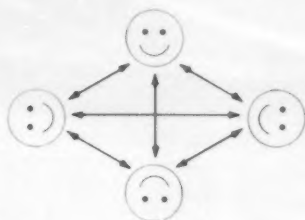
Stage IV. *Inter-Individual Action* takes place when the child seeks others to be part of the play activity. It is of a competitive nature directed by one person toward another. Two-man tag is a simple inter-individual activity. Pillow fights, squirt gun fights, and water balloon fights may be motivating interactive types of play for the deaf-blind. At a more advanced level, dual sports, checkers, card games, and other board games would be appropriate.



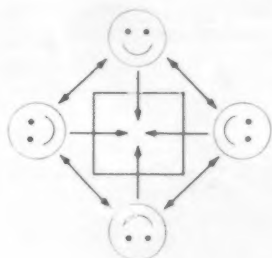
Stage V. *Unilateral Action*. "Duck, duck, goose," tag, and "drop the handkerchief" are types of unilateral play. It is of a competitive nature among three or more persons, one of whom is the antagonist of it.



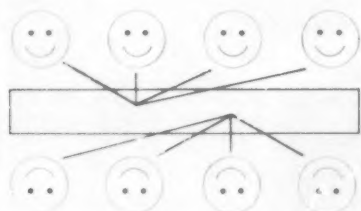
Stage VI. *Multilateral Action* is competition among three or more persons with no one person as the antagonist. A free-for-all pillow or water balloon fight, "steal the bacon," and card or board games involving three or more persons are types of multilateral activities.



Stage VII. *Intergroup Action* requires cooperation by two or more individuals. Rolling a ball back and forth or playing catch are simple forms of intergroup actions. Dual tumbling stunts such as riding on each other's backs in crawl fashion, pulling each other on gunny sacks, or pushing each other on scooter boards are appropriate play activities at this level for deaf-blind children. Carving a pumpkin, building a group pyramid, or playing "house" are intergroup activities where the participants are cooperating to reach a mutual goal.



Stage VIII. *Intergroup Competitive Action* takes place between two or more intragroups. Keep-away, relays, and all team sports fall into this category.

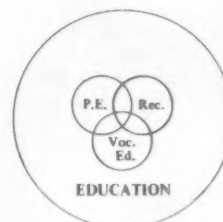


Regardless of the level of play, including rather unusual activities in a recreation program for deaf-blind children is often necessary because of their visual and auditory deficits. Pudding painting and body painting and shaving cream, squirt gun, and water balloon fights would not normally be included in a recreation program. "Normal" children do participate in these kinds of activities, however, whether mother knows it or not! The institutionalized child should not be deprived of such experiences, especially when the tactile system is one of the prime sensory modes.

Residential students often miss out on simple "home life" activities. They must be given the opportunity to wash a car or dog, make a cake, or just fly a kite. Again, these activities may not be considered traditional recreation activities, but they do need to be incorporated into a program for deaf-blind children. Outings such as picnics, hikes, and shopping and a trip to the zoo, circus, or amusement park should be an integral part of the recreation program as well.

Summary

Motor development is essential to the entire development of the deaf-blind child. "Movement activities which provoke thought may improve intelligence" (Cratty, 1967). All activities included in the motor skills or recreation program for deaf-blind children should be designed to do just that: provoke thought. Motor and perceptual tasks should be combined whenever possible. Deaf-blind children must be taught many basic motoric skills which "normal" children seem to acquire naturally. The balance and eye-foot coordination, muscular strength and flexibility, cardiovascular endurance, general coordination, and fitness of most deaf-blind children are also way below par. Motor development is a springboard for recreation. Physical education or motor education, recreation, and vocational education all overlap and may be illustrated as follows: The three complement each other and all are essential to the child's total education.



Recreation must be defined in relationship to the multihandicapped child's orientation. Because the present educational practice is to discourage self-stimulatory activities, this type of activity should not be considered recreational. To teach the deaf-blind child how to play is necessary. At first, he or she may not enjoy all the activities included in a structured program. Eventually, however, some of the activities taught during organized periods will become the child's favorites, and he or she will want to engage in them during free time.

The lack of motivation is a tremendous obstacle to overcome. It is the educator's task to find or

invent constructive recreational activities that are appropriate for each child's stage in development and which will be interesting for him or her. Avedon (1974) has outlined the following phases of activity: intraindividual action, extraindividual action, aggregate action, interindividual action, unilateral action, multilateral action, intergroup action, and intergroup competitive action. Rather unusual activities such as pudding painting and shaving cream, squirt gun, and water balloon fights should be included in a recreation program for the deaf-blind because the tactile system is one of their prime sensory modes.

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